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Sanitation in the International Health Field*

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IN the current issue of the quarterly, *Foreign Affairs,* Sir Duff Cooper makes the following statement:

"There was a time when Islam hoped to destroy Christianity and to convert the world. In those days there could be no peace with the Moslem. But there was not continual war; and in the course of centuries, although neither faith has compromised with the other, their adherents have learnt that the world is broad enough to hold them all and that they can even become the best of friends."

As one looks back in history upon those troubled times of the 11th, 12th, and 13th centuries and feels the tensions of that day which led to the Crusades, even to a Children's Crusade, against the hated Saracen, one senses something of those same feelings which pervade our world today. Certainly that was an all-out struggle for the known world between two strong contestants. Both sides considered that the decision could be only by a KO; no technical knockout would do, no judge's decision.

It is heartening to have Sir Duff Cooper point out, at this moment, that a way of life *was* found which permitted those forces to coexist in the world. This serves to confirm our faith that we shall find not only a way through today's baffling problems but a way without appreciable destruction. It further gives a renewed validity to our belief that we can build a secure world, through positive action to improve the economic and social lot of mankind, a belief expressed by the President of the United States in his inaugural address. This belief has given rise to what is now commonly known as the Point IV program, a program that rests on a faith in the value of man himself, whoever or wherever that man may be.

Since health is one of the roots of social and economic progress, it is incumbent upon us to press forward its development throughout the world as rapidly and effectively as possible. The problem is in the first instance one of sanitation. The key to it is held, in

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almost unique fashion, by the sanitary engineers of America.

It is impossible to give any true estimate of the toll taken by the world's insanitary environment. The Director General of the World Health Organization (WHO) has said that one-fifth of all the deaths throughout the world are due to faulty environmental conditions. Even this estimate gives no measure of the impact of inadequate sanitation upon man as a productive force. Death is a terminal event. The major health problem of the world today is not death, as it was during the great historic pandemics of cholera and plague and, in our life times, influenza. It is chronic and repeated infection and infestation which converts man from a productive unit of society to a liability to society. In building a free world, with a sound economy, the estimated 3,000,000 annual deaths from malaria, costly as they are, are less important than the hundreds of millions of annual attacks of malaria. The problem of bilharzia in Egypt is not that of death, but the fact that almost three-quarters of the population suffer from a chronic, debilitating disease which saps the physical and mental strength of the country. Again, the Director General of the WHO has stated that "probably three-fourths of the world's population drink unsafe water, dispose of human excreta recklessly, prepare milk and food dangerously, are constantly exposed to insect and rodent enemies, and live in unfit dwellings." That would mean, then, that 1½ billion persons live in primitive conditions of insanitation.

The urban problems abroad are the familiar ones of water supply, sewage and waste disposal, market and restaurant sanitation, and industrial hygiene. They exist in an environment in which there is a dearth of technical competence, a shortage of capital, inept public administration, and no public comprehension of the goals being sought. Often the degree of poverty is so profound, and the acceptance of filth so complete, that the battle toward urban cleanliness is sure to be a long, arduous, and often frustrating one.

The rural problem is even greater and in many ways more difficult. A single water supply system may provide potable water to a million urban residents. How, though, can one assure potable water for a million semi-nomadic rural wanderers of the same country? In regard to sewage disposal the problem is often further complicated by tradition, or economic factors. To rural masses of the world, the privy is neither a necessity of life nor an integral part of a home. The dire effect of this upon a rural nation was clearly brought home to me by a statement recently made by an American medical observer who stated that the worms infesting the people of a certain semi-tropical country metabolize more of the produce of that country than do the inhabitants. Half the work of a sick peasantry, therefore, goes into the cultivation of food for the worms that make them sick.

In order to assist in overcoming these great and basic problems, the United States participates actively, as a government, in two types of international health work. One is the truly international type in which the knowledge and resources of many countries are pooled and used in a program which is jointly determined and administered by an international staff. This is the so-called multilateral type of international activity, as exemplified, in the field of health, by the WHO and its Regional Office for the Americas, the Pan American Sanitary Bureau (PASB). The other, or bilateral type of activity, is that in which the United States works directly with another government in a joint program designed to improve health in the foreign country concerned. This type of program is exemplified by The Institute of Inter-American Affairs (IIAA), which

today participates in health and sanitation programs jointly with 14 Latin American countries. It is important to understand the basic difference in these two types of activity. In the WHO the United States has one vote among some 60, in determining the character of the program. In each bilateral program it has an equal voice with the other government concerned. The ideal toward which to work is multilateral action, with full and unhindered international coöperation. However, the multilateral method has certain limitations. It cannot be perfected until countries are in a position to match contributions in significant amounts on a reasonably equitable basis. True multilateral internationalism cannot exist on a billion dollar level when only one country has billions. We are today building in the WHO the solid core around which can be built, progressively, a great multilateral attack on the world's health problems. Meanwhile, in our present very imperfect world, we can do much to hasten the development of the world we want by continuing also the more direct bilateral approach.

Both types of activities, multilateral and bilateral, are now being expanded under Point IV. As they expand, each is supplementing the other, striving to attain a maximal impact on world health problems.

The United States alone cannot, of course, remedy the existing situation. The peoples themselves must eventually clean their own environment, and keep it clean. The United States can take, and is taking, leadership in moving the world toward this necessary goal. Its action in this line is essentially: (1) continual insistence, in the health councils of the world, on the fundamental importance of a sanitary environment, (2) insistence, in economic and political councils, upon the basic importance of man's productive capacity as an element in economic progress, (3) demonstration abroad, through coöperative programs, of the techniques that improve the public health, (4) education of leaders in these techniques in our schools or through loans of our teachers.

Sanitary engineering as a science and a profession is purely American. Where it exists elsewhere in the world it is an offshoot of American sanitary engineering. In the Americas there is now a virile and active Inter-American Association of Sanitary Engineering as evidence of the extension of the profession in this hemisphere. There are in Italy, Egypt, Greece, Yugoslavia, the Philippines, and doubtless other countries, a handful of sanitary engineers trained here. However, in too much of the world the message has not as yet carried. Accomplishments of sanitary engineering have too often been vaguely attributed to the wealth of America rather than to the devotion of trained men to the sanitary sciences.

In view of the American root of sanitary engineering, it is not surprising to find that, at the moment, it is making its largest international contribution through the bilateral mechanism.

It is well to examine what has been done.

In 1942, the work of the Health and Sanitation Division of the IIAA was started in Latin America. We look on this work as essentially the work of the American republics themselves, aided by United States "know-how." We serve as a catalyst, in that, by our minor investment and by our furnishing trained personnel, we can engender interest and assist in training others to carry on programs. Since its inception, the IIAA has assisted in many sanitary engineering works of a diversified nature in eighteen of the American republics. Today, the IIAA is aiding fourteen countries by assisting in the administration and financing of coöperative programs.

Sanitary engineers have done much in the past to shape and carry out this

program. At the present time, they are furnishing much of the leadership. Harold B. Gotaas was at one time President of the IIAA, Clarence I. Sterling, until recently, was Director of the Division of Health and Sanitation, Wyman R. Stone is now Associate Director, and Millard E. Smith is Chief of the Engineering Section. Each Health and Sanitation Field Party has a sanitary engineer either as Chief of Party or Associate Chief.

The leadership and participation of sanitary engineers in these programs have been of major importance. There are few health programs that assist in the development of interest in health more than does the installation of a water works system. The flowing water is a constant reminder of positive accomplishment. It is often the beginning of a more complete health program and serves to show people how their lot can be improved. The installation of sewerage systems or the building of privies can be projects in which the populace participates through raising local funds and by the use of local labor. Furthermore, sanitary engineering can furnish the stimulus for more complete health programs. A community that has assisted in the installation of its water supply soon looks for other ways to better itself.

In the field of water supply a total of 140 projects have been completed by the Institute and an additional 54 projects are currently under construction. Most of these projects consist of complete construction and installation of water supply systems for small towns, ranging in size from 5,000 to 25,000 population. In a few instances water supply systems for smaller towns have been constructed and systems for larger cities improved. Some of the projects include treatment plants.

In all of the basic agreements made by the IIAA with the governments of foreign countries, provision is made whereby the joint fund established by the two governments and administered by a joint Service (or Servicio) may be supplemented by third parties, such as individuals, community groups, cities, or states. This device provides for local participation in programs internationally established. Although such third-party contributions may be made to any projects carried out by the Institute they have been more usually made for the construction of new water supply systems or improvements to existing ones. These contributions toward the total cost of the project are generally in the form of cash but can be, and sometimes are, in the form of services. To illustrate how this operates in some of the countries in which the IIAA has active programs in water supply construction, certain examples can be noted.

The program in Venezuela is predominantly devoted to the development of water supplies in small towns. The community or the state in which the community is located puts up 75 per cent of the estimated cost of the project and the Servicio the remaining 25 per cent. In one or two instances the state has put up 100 per cent of the necessary funds.

Extensive water supply construction has been and is being carried out in Honduras. Here there is no set percentage, as in Venezuela, but each municipality pays as much of the cost as it is able. This has ranged from as low as 35 per cent to about 70 per cent, the average being better than 50 per cent. As cash is not plentiful in Honduras but the desire for pure water great, some of the contributions have been in the form of labor supplied by the townspeople. In the recently completed system for the town of San Jose de Copan (population 1,500), part of the contribution of the town was in the form of real back-breaking labor by the men of the community. The town is accessible only by means of

a winding mountainous mule trail some 12 miles in length. Materials other than pipe were transported by mule but because of the terrain the pipe lengths had to be carried by man power; two lengths of 87 lb. pipe per two-man team for the total distance.

On the same coöperative basis the Institute has carried out, in the field of sanitation, 69 projects in sewage disposal, 191 malaria projects, 194 projects in community sanitation, such as privy construction, rat control, food and restaurant control. In addition it has built laundries, slaughter houses, public markets, public baths, and other sanitary facilities.

In some of the more highly industrialized countries the IIAA has materially assisted in industrial hygiene work. Comprehensive studies have been carried out in four countries (Peru, Chile, Bolivia, Brazil) and the IIAA currently is directing the industrial hygiene program being carried out in Peru. It is also giving technical assistance in this field to the government of Bolivia and plans are under way for similar programs to be started in both Chile and Brazil.

Important as are all of these material achievements in themselves, of greater significance is how they came about through people learning new ways of working together. One satisfaction leads to a desire to tackle something else.

In order to accelerate this process, since 1944, the IIAA has given postgraduate training in sanitary engineering to 130 engineers of 18 Latin American countries. Since 1946, the U. S. Public Health Service has provided training for 72 sanitary engineers from 29 countries.

Further, in the bilateral area of activity, the Economic Coöperation Administration (ECA) and the Public Health Service have jointly carried on a program in Greece which has essentially freed that country of malaria, has improved the organization of public health, and has installed water supplies in a large number of towns previously without them.

Now ECA and the Public Health Service are embarking on a program in South East Asia—Indochina, Thailand, Burma, and Indonesia—which will extend sanitary engineering into that vast, underdeveloped area. It is significant that of the first six persons sent to Indochina by ECA and the Public Health Service, 2 were sanitary engineers. One of the major objectives of the developing program in that area is the creation and staffing of divisions of sanitary engineering in the respective ministries of health. Today, there are eleven sanitary engineers from Europe visiting in the United States under the auspices of ECA. In its bilateral international health work the United States is depending heavily upon sanitary engineering.

Looking at the multilateral phase of international health activities we find a rather different situation. In the WHO the United States has taken the lead in directing attention toward basic sanitation. On every delegation to the World Health Assembly, the United States has included a distinguished sanitary engineer—Abel Wolman 1948, David Lee 1949, and Mark Hollis 1950. Mr. Wolman and Mr. Harry Hanson have served on delegations to the Executive Board. Mr. Wolman is also Chairman of the WHO Expert Committee on Environmental Sanitation which has rendered an important report focusing world attention of sanitation needs. Mr. Sol Pincus served for some months on the staff of the WHO and was succeeded early this year by Mr. Herbert Bosch. All these men are honored among you. They are actively concerned with extending to the world the full values of your profession. The United States will not be satisfied with the program of the WHO until that program shows full evidence of vigor in attacking the problems of basic sanitation, and until it recognizes that the engineer trained specifically for this

task is the person most competent to do it.

Although the multilateral agencies are only on the threshold of working with water and sewage problems, they have done highly effective environmental work in the field of insect control. The WHO has, from the beginning, given malaria control its highest priority. Malaria demonstration teams are, or have been, at work in India, Afghanistan, Pakistan, Thailand, and other highly malarious areas. UNRRA and WHO played a large role, later with ECA, in the dramatic control of malaria in Greece. WHO is giving technical leadership to a multination insect control program throughout Central America for which supplies are being provided by UNICEF. The PASB, Regional Office of WHO, undertook four years ago, a program of hemispheric eradication of *Aedes aegypti*. This ambitious program is showing remarkable accomplishments. This ubiquitous mosquito has been eradicated in Bolivia and appears to be on the point of eradication in Brazil, Chile, Paraguay, Uruguay, and Venezuela. Soon the United States will need to clean its own house or be put to shame by its neighbors to the south.

It can be said fairly that much has been accomplished in the last few years to demonstrate the importance of sanitation and its techniques to other, less advanced, countries. This is particularly true in the Americas where we now find young, alert sanitary engineers at work in every country. In Peru we find a school of sanitary engineering. In Sao Paulo, Brazil, the School of Public Health gives a full year's course to civil engineers. At least two countries, Venezuela and El Salvador, are thinking now in terms of completing the job of installation of modern water supply in all their towns. Venezuela is well along in accomplishing this objective. Insect control is moving ahead rapidly, with the leadership and resources coming largely from the multilateral agencies.

In the field of international health there is much for the engineer to gain as well as to give. New projects afford unusual opportunities for the engineer to put his academic knowledge into practice. He has the opportunity to conduct basic surveys and then design, build, and put into operation water supply and sewerage systems of varying size in varying environments. The more experienced engineer finds the opportunity to plan major works and nationwide sanitation programs and to put them into effect.

In international work the sanitary engineer finds himself called upon to exercise his basic engineering training in many connections—design of health centers, laboratories, or even hospitals. At the same time he finds himself called upon to advise and help in regard to problems considered here to be entirely in the province of the physician, such as venereal disease control, tuberculosis, nutrition, etc. He will find wide scope for both the purely engineering aspect of his training and his broad training as an expert in health.

In international health, whether it be through private, public, multilateral, bilateral, or whatever type of organization, we have our great opportunity as health technicians to contribute to the cause of peace. It is not too late to build a better world. Sir Duff Cooper has reminded us of that. Uniquely, we, and particularly you sanitary engineers, have the know how that is so urgently needed in the underdeveloped areas. You have done well in starting the job, and the effects are evident, particularly in Latin America. It is urgent that you press forward on other fronts until the world is fit to live in and man can live happily with man in health and at peace.

Legally Established Qualifications and Methods of Appointment for State Health Officers

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THERE appears to be no detailed study of the present-day legal status of the state health officer, although an excellent but brief generalized summary of the topic is found in the latest edition of Tobey's book.[1] Because of this lack, and in the belief that this information would be of value, the present study was undertaken. One of the first questions asked of the public health administrator who makes recommendations for legislation pertaining to the office of state commissioner of health is, "How do other states appoint their state health officer, and what qualifications do they require him to have?" The answer can be found, but it is not readily accessible, and even if it is known in a general way that in one-half of the states the head of the department of health is appointed by the governor, it will not often be known in which states this is so and in which it is not.

The purpose of this paper, then, is twofold: first, to show in detail for each of the 48 states what method is used to select the health officer and what requirements he must meet; second, to give a picture of the current situation in the United States by summarizing this information, so that a base line is drawn in case someone wishes to study the subject in the future, and compare his findings with a former state of affairs. The procedure followed in making this study was not to poll the respective health officers of each state, but to go directly to the appropriate statutes in the state codes and annotated laws, checking the latest cumulative supplements for revisions, and also checking the session laws passed since the last published revision in each state where this was appropriate. It is felt that the information collected in this manner can be considered up-to-date to the end of 1949.

A study of Table 1 will confirm the expectation that there is a great variation in the requirements for state health officers as set forth by the laws of the 48 states. These requirements range in degree from none at all, through those that can be considered to be fairly comprehensive, to those that are quite adequate.

More emphasis has been placed by the legislators on the possession of the degree of Doctor of Medicine than on any other qualification of the state health officer. This is a specific requirement in 39 states, and in one other, Idaho, it is so strongly implied that it should be accepted as a requirement, making a total of 40 states in which the law prescribes the possession of this background. The 8 states in which the law makes no mention of whether or not the health officer must be a physician are: Alabama, Kansas, Louisiana, Minnesota, Nebraska, Rhode Island, Tennessee, and Wisconsin.

TABLE 1

Legally Prescribed Qualifications of the State Health Officer

	Must be a physician	*Must have or be eligible for license*	*Must be graduate or have a degree from an approved medical school*	*One year's post-graduate public health training*	*Must have experience*
Alabama					
Arizona	x	x	x	x *	5 yrs.
Arkansas	x		x		7 yrs.
California	x	x	x	x	5 yrs.
Colorado	x		x	x	3 yrs.
Connecticut	x	x	x	x	5 yrs.
Delaware	x			x †	5 yrs.
Florida	x	x	x		yes
Georgia	x	x			5 yrs.
Idaho	‡				‡
Illinois	x	x			5 & 6 yrs.
Indiana	x	x			yes
Iowa	x				yes
Kansas					
Kentucky	x	x	x		5 yrs.
Louisiana					
Maine	x				yes
Maryland	x				yes
Massachusetts	x				yes
Michigan	x			x †	5 yrs.
Minnesota					
Mississippi	x				yes
Missouri	x		x		yes
Montana	x	x	x	x	2 yrs.
Nebraska					
Nevada	x	x	x	x	3 yrs.
New Hampshire	x				yes
New Jersey	x	x	x		5 yrs.
New Mexico	x	x	x		yes
New York	x		x		10 yrs.
North Carolina	x				
North Dakota	x	x	x		yes
Ohio	x	x	x		yes
Oklahoma	x	x			yes
Oregon	x				
Pennsylvania	x		x		10 yrs.
Rhode Island					
South Carolina	x		x		yes
South Dakota	x	x	x		yes
Tennessee					
Texas	x		x		5 yrs.
Utah	x	x	x	x	
Vermont	x				
Virginia	x		x		yes
Washington	x				yes
West Virginia	x	x	x		5 yrs.
Wisconsin					
Wyoming	x		x	x	5 yrs.
TOTALS	40	18	23	10	36 **

* and 3 years' experience in place of 5 years' experience without training.
† in substitution for 5 years' experience.
‡ strongly implied.
** in substitution for graduate training in public health.

The next most common requirement, found in 36 of the 40 states which require the holding of a medical degree, is that of experience. This shows a great range in extent, however, from the state of Washington, which requires only that the person appointed to the position of state health officer "shall be an experienced physician," to Illinois, which states that the Director of Public Health "shall have had at least 5 years' practical experience in the practice of medicine and surgery . . . and at least 6 years' practical experience in public health work." The 4 states which fail to mention that the physician appointed to direct the activities of the health department within their boundaries must have some experience are: North Carolina, Oregon, Utah, and Vermont. Eighteen of the 36 states prescribe the actual number of years of experience which the physician must have had, sometimes in medicine and surgery alone, sometimes just in public health, and occasionally in both of these fields. The other 18 states merely say that the candidate for appointment must have had experience, or imply that this is necessary by stating that he must be "skilled in sanitary science." The majority of the 18 states which prescribe the number of years of experience necessary require 5 years, but one state, Montana, requires that the executive officer of the board of health "shall have had at least 2 years' experience in administrative practice as a full-time public health officer," and, at the other extreme, the state of New York requires that the commissioner of health shall be "of at least 10 years' experience in the actual practice of his profession, and of skill and experience in public health duties and sanitary science."

Twenty-three of the states requiring their state health officer to be a physician also say that he must have been graduated by or hold a degree from an acceptable medical college, usually specifying that the professional school be recognized by the board of medical examiners of the particular state, or, in a few instances, by the Council on Medical Education and Hospitals of the American Medical Association. Occasionally one encounters such terms as "recognized and reputable medical college" (Florida), or "incorporated medical college" (New York).

In only 18 instances does the law specifically state that the health officer must have a license to practise medicine. In the case of this particular requirement, it must be noted that even if the law dealing with the state health officer does not detail this item as essential, a license will nevertheless almost always have to be procured, either under other existing statutes or from the force of medical opinion. Usually the law is written to say that the health officer must have a license, or must be eligible for licensing, or that he is to procure such license within a specified time limit (usually 6 months). The implication in some cases is that the state health officer may be chosen from among persons who are not residents of the state in question. In connection with this point, it is noteworthy that in only three instances do the statutes require that the state health officer be a resident of the state in which appointed; these states are Missouri, Nevada, and Vermont. In one other state, Texas, the fact of residency is implied by the phrase "not less than 5 years' experience in the practice of medicine within the state."

Although it would seem that the health of the people of a state is of sufficient importance to engage the undivided attention and efforts of a highly trained and well qualified individual, only 13 of the 48 states have a legal requirement that the state health officer will devote his full time to his duties. In a number of states, judging by the salary paid and the size of the state, this omission is an oversight on the part of the legislators, and the health officer in actuality is ex-

TABLE 2

Methods of Appointment of State Health Officer

	Appointed by Governor		Appointed by Board	
	Approval * necessary	Needs no approval	Approval † necessary	Needs no approval
Alabama				x
Arizona				x
Arkansas			x	
California		x		
Colorado				x
Connecticut		x		
Delaware				x
Florida		x		
Georgia				x
Idaho		x		
Illinois	x			
Indiana			x	
Iowa	x			
Kansas				x
Kentucky				x
Louisiana	x			
Maine	x			
Maryland				x
Massachusetts	x			
Michigan	x			
Minnesota				x
Mississippi				x
Missouri		x		
Montana				x
Nebraska	x			
Nevada			x	
New Hampshire				x
New Jersey	x			
New Mexico				x
New York	x			
North Carolina			x	
North Dakota		x		
Ohio	x			
Oklahoma				x
Oregon				x
Pennsylvania	x			
Rhode Island	x			
South Carolina		‡ x		
South Dakota	x			
Tennessee		x		
Texas				x
Utah	x**			
Vermont			x	
Virginia		x		
Washington		x		
West Virginia				x
Wisconsin				x
Wyoming				x
SUM	14	10	5	19
TOTAL	24		24	

* by senate or council.
† by the governor.
‡ upon recommendation of the executive committee of the state board of health.
** upon recommendation of the state board of health.

pected to spend all of his time tending to the job of running a state health department. It is evident that unless there is a provision in the law to the contrary, there is always a possibility that the state health officer will engage in private practice or some other occupation, at the same time that he is supposed to be directing the affairs of a department of public health. Though it may seem that this consideration is a minor one, and that it should be "understood" that the state health officer will not engage in private practice while holding his office, some of the states have undoubtedly shown more wisdom than others by not leaving the matter to chance. The 13 states mentioned above have usually incorporated into the body of their public health laws a phrase similar to that used by New York, where it is required of the commissioner of health that "during his term of office he shall not engage in any occupation which would conflict with the performance of his official duties."

The subject of compensation of the state health officer is outside the scope of this paper; it has already been covered in an excellent study of the salaries of all state public health workers.[2] Although the length of tenure of the state health officer was found to be prescribed in 18 of the state codes (being usually set at 4 years), discussion of this subject is also beyond the limits of the present study.

There are no provisions in any of the state laws reviewed which prohibit a woman from holding the position of state health officer. Women who have the proper qualifications are certainly as eligible legally for this position as men. One state, North Dakota, recognized this fact by using the phrase "he or she" in referring to the health officer, but the other 47 use "he" in the general sense.

Ten states have taken cognizance in their laws of the need for specialized training in public health by requiring attendance at a recognized school of public health. Occasionally a degree is required, or a certificate, but usually the law is phrased as "one year of graduate study in a school of public health." In 2 states, Delaware and Michigan, this year of study can be substituted for the otherwise required 5 years' experience.

In Table 2 the method of appointment of the state health officer is shown for each state. It will be seen that in 24 of the states the health officer is appointed by the governor, and that in the other 24, appointment (or "election") is by the state board of health. The members of the latter are usually appointed by the governor in a manner prescribed by statute. When an appointment is made by the state board of health, it must be approved by the governor in 5 states, but no approval is necessary in 19 states. When the governor makes the appointment, approval by senate or council is necessary in 14 states; no approval is required in 10 states. In South Carolina the governor appoints a person recommended by the executive committee of the State Board of Health. In Utah, the governor appoints as state health commissioner a person recommended by the State Board of Health, and, in addition, this appointment must be approved by the senate.

In a few states an official oath is required, and the taking of such an oath is necessary to the legal possession of the office of state health officer.[3] Some states require that a bond be filed by the health officer. This information has not been itemized here for each state, as it is not applicable to the discussion.

SUMMARY

Each of the 48 state statutes which were in force at the end of 1949 and which relate to the qualifications and methods of appointment of state health officers has been studied, and the infor-

594716

mation in these laws has been summarized in two tables and discussed in the text. A factual presentation of the material has been adhered to, with little comment on the desirability or otherwise of the provisions of the various laws studied.

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1951 Meeting of the Royal Sanitary Institute

Dr. J. Dudley Robinson, Secretary of the Royal Sanitary Institute, London, has announced that the annual Health Congress sponsored by the Institute will take place in Southport, England, April 23–27, 1951. In recent years this Congress has attracted audiences exceeding 2,400 in number; and many overseas governments, municipalities, and other institutions have sent delegates. There will be meetings of interest to members of the medical profession, engineers, architects and surveyors, veterinarians, sanitary inspectors and other officers, as well as members of local authorities and other public bodies. The provisional program for the meeting is available from the central office of the American Public Health Association.

Fellows of the American Public Health Association who expect to be in Great Britain at the time of the Congress are asked to communicate with the Executive Secretary, A.P.H.A.

The Specialized Public Health Nursing Consultant in State Health Departments

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INFORMATION is available concerning the number and types of specialized public health nursing consultants, their relationships within the state health departments, the responsibilities they may be expected to assume, and the recommended qualifications for specialized public health nursing consultant positions. A survey of the literature, however, failed to reveal current state health department practices which affect the relationships and the work of these consultants.

STATEMENT OF THE PROBLEM

The purpose of this study was to determine:

1. The organizational pattern within which specialized public health nursing consultants function in state health departments.
2. The kinds of responsibilities they assume.
3. The methods by which they carry out their responsibilities.
4. The preparation and experience required by state health departments for specialized public health nursing consultant positions.

SOURCES OF DATA AND METHODS OF PROCEDURE

Data were obtained from a study of nursing, public health, and other literature, unpublished material, and questionnaire returns.

Five questionnaires were sent to the director of the division of public health nursing of each of the 48 state health departments, a total of 240 questionnaires. The questionnaires were of two types. Each director of public health nursing was asked to return questionnaire number 1 which requested information regarding the types of specialized public health nursing consultants employed in the department and the Civil Service or Merit System requirements for such positions, as well as other information which was identical with that requested in questionnaire number 2. The public health nursing director was asked to transmit one copy of questionnaire number 2 to the director of the division of maternal and child health, one copy to the maternal and child health nursing consultant, one copy to the director of any other special division she might choose, and one copy to the nursing consultant in that special division. This procedure was followed because specialized nursing consultation service involves both the special division and the division of public health nursing.

Replies were received from 40, or 83 per cent, of the state health departments. A total of 101 questionnaires were returned from 31 states. Questionnaires were received from 30 public health nursing directors. One public health nursing director returned a completed questionnaire stating she had previously had specialized public health nursing consultation service in her department and had one consultant in training for a position at the present

time. Information from this questionnaire was included in the study. Of the 40 state health departments from which replies were received 9 indicated that they were unable to return the questionnaires. The majority of these states either employed no specialized nursing consultants or reorganization or policy changes then in progress would invalidate the information available at the time the questionnaires were received. The number and types of state health department personnel who returned questionnaires is shown in Table 1.

TABLE 1

Number and Types of State Health Department Personnel Returning Questionnaires

Types of Personnel	*Number of Persons*
Division Directors	
Chronic Disease	1
Crippled Children	3
Gerontology and Chronic Disease	1
Industrial Health	2
Maternal and Child Health	8
Mental Hygiene	2
Public Health Nursing	30
Tuberculosis	1
Tuberculosis and Venereal Disease	1
Venereal Disease	2
Specialized Public Health Nursing Consultants	
Cancer Control	1
Chronic Disease	1
Dental Education	1
Epidemiology	1
Field Experience	1
Gerontology and Chronic Disease	1
Hospitals and Maternal and Child Health	1
Industrial Hygiene	7
Maternal and Child Health	16
Maternity	1
Mental Hygiene	2
Orthopedic	4
Pediatric	1
Public Health Nursing Education	1
Tuberculosis	1
Venereal Disease	3

Questionnaires were received from the director of the division of public health nursing and one or more other persons in the same state health department in 26 states. In order to obtain as clear a picture as possible, the replies received from other state health department personnel were compared with those of the director of public health nursing. In many instances it was found that the opinions of persons in the same state health department varied. When this was observed to be the case, the reply given by the largest number of persons was taken as the answer to the question. When there was an equal number of variations of opinion, that of the director of public health nursing was used. When, as happened in some instances, the director of public health nursing did not reply to the question and there was an equally divided number of answers to the questionnaire item it was considered to be unanswered. Opinions of persons in the same state health department were compared in this manner for each of the 57 questionnaire items which were answered by the three types of state health department personnel, namely, the director of the public health nursing division, the special division directors, and the specialized public health nursing consultants.

SUMMARY OF FINDINGS

Consultation, in business or any other field, is the mutual consideration of a subject whereby two or more persons, one of whom has special knowledge regarding the subject, reach a decision by means of coöperative pooling of their knowledge and ideas. The plan of action which may be evolved is in no way mandatory upon the line members of the organization, who heave the full and final responsibility for directing the activities of the people who comprise the organization. In accordance with this latter premise, specialized public health nursing consultation has always been considered as an advisory service. A specialized public health nursing consultant is a person who is adequately prepared in public health nursing, who has had advanced training in a special field of nursing, who is not generally expected to have responsibility for the administration of public health nursing in the field, and who functions in an advisory capacity in a special field.

The first specialized public health nursing consultation services offered to

local health agencies by state health departments appear to have been inaugurated some time during, or prior to, 1932. By 1939 nursing consultation in the fields of tuberculosis, venereal disease, orthopedics, and maternity were available from some of the state and territorial health departments. Ten years later the types of specialized nursing consultation services had increased from the previously mentioned four types to a total of sixteen.

The number of specialized nursing consultants employed by state health departments has increased rather slowly. In 1948 there were 258 specialized nursing consultants employed by the state and territorial health departments.

Although complete information was received from only 30 of the 48 states, it would appear that the types of specialized public health nursing consultants had increased. When the questionnaires, which were mailed to the state health departments the latter part of March, 1950, were returned, there were 22 types of specialized nursing consultants employed by state health departments, as is shown in Table 2. A total of 129 consultants were employed. This would indicate that the number of consultants had remained fairly constant, or, in fact, it is possible that there actually may have been fewer specialized nursing consultants employed than there were at the time of the last Public Health Service report of January, 1949.

Two or more questionnaires were received from 26 states. In an attempt to obtain a clear picture of the thinking among members of the same state health department the replies were compared. Of the 57 items included in the questionnaire only 2 items were answered in the same way by all members of the same state health department in each of the states. This would imply considerable confusion among members of the same state health department regarding procedures within that department.

TABLE 2

Number and Types of Specialized Nursing Consultants Employed in 30 State Health Departments *

All Types of Consultants	*Number of State Health Departments*	*Number of Consultants Employed*
Cancer	5	5
Chronic Diseases	1	1
Dental Health	1	1
Diabetes	1	1
Field Experience	1	1
Gerontology and Chronic Disease	1	1
Hospital Facilities	1	1
Hospital — General	1	1
Hospital — Maternity	2	3
Hospital Nursing	4	6
Industrial Health	15	18
Maternal and Child Health	26	30
Maternal and Child Health — Educational	1	1
Mental Hygiene	8	8
Nursing Education	4	4
Nursing Homes	1	1
Orthopedic	7	12
Pediatric — listed separately from Maternal and Child Health	2	2
Public Health Nurse Midwife	1	1
Student — Generalized	1	1
Tuberculosis	20	20
Venereal Disease	10	10
All Types of Consultants		129

* One of the states from which questionnaires were received did not answer this question.

Nothing has been written concerning the organizational structure within which the nursing consultants function in the state health departments, nor have their responsibilities to the public health nursing and special divisions been discussed except in the most general terms. It is a major premise of public health nursing that each type of nursing responsibility be carefully considered and made clear to each member of the organization. The responsibilities of the specialized nursing consultants differ in some respects from those of other nursing personnel. They are staff members rather than line members and, therefore, are not usually expected to have administrative responsibility. They act in an advisory capacity and their advice and assistance are given in the specific areas of their respective knowledges. They have a responsibility to assist in the coördination of the nursing aspects of the work of the special divisions with the total public health nursing program

of the state health departments. They are also expected to act in a liaison capacity between the public health nursing and special divisions. They are expected to analyze needs, to advise regarding policies and procedures, and to participate in educational programs in their respective special fields.

The specialized public health nursing consultants were jointly responsible to the division of public health nursing and to the special division in the majority of the states. In most of the states in which this method of assignment was used it was also the preferred method of nursing consultant assignment. To which division or divisions the specialized nursing consultants are responsible was not clearly understood by all of the persons in the same state health department in more than one-third of the states from which questionnaires were compared. Under these circumstances it is understandable that in more than half of the states a change in the method of assignment of the specialized nursing consultants was thought to be desirable. In the majority of the states in which the specialized nursing consultants were responsible to only one division, their relationships to the other division were clearly formulated.

The responsibilities of the specialized nursing consultants were determined jointly by the division of public health nursing and the special divisions, in the majority of states. The specialized nursing consultants participated in the determination of their responsibilities in every state. In the majority of the states specialized nursing consultant responsibilities were written out, although in some instances this consisted of the job description outlined by the Civil Service or Merit System.

In all state health departments, responsibilities of the specialized nursing consultants included assisting in the evaluation of the nursing aspects of local health department programs and planning and participating in educational programs. Additional responsibilities in the majority of state health departments were:

1. Planning field visits to local health agencies.
2. Assisting local health agencies following evaluation of the nursing aspects of their programs.
3. Preparing reports.
4. Preparing educational materials.
5. Planning work with local health agencies in accordance with the work being carried on in local health agencies by other state health department personnel.
6. Giving consultation services to both public and private health agencies.
7. Administrative duties.

In the majorty of instances, the specialized nursing consultants planned their work directly with the local health agencies and coöperatively with other state health department members. This would indicate considerable coördination of work among members of the same state health department.

Specific field visits were planned by the specialized nursing consultants one month or more in advance, in the majority of the states. In most states, nursing consultant field reports, which were written for each local health agency visit, were available for the reference of other state health department personnel when they prepared for field visits. The majority of specialized nursing consultant field visits were made at the request of local health agencies. In none of the states were routine visits to local health agencies made by specialized nursing consultants. In the majority of the states, local health agencies were notified one week or more in advance of specialized nursing consultant visits. In slightly less than one-fourth of the states, the local health agencies were either informed of consultant visits too late for adequate preparation; were not informed at all; or no clear statement could be given by persons who replied to the questionnaires. In the majority of the states the local health department was

notified of all visits of the specialized consultants to other health agencies within the health department jurisdiction. The specialized nursing consultants usually made field visits alone, although they occasionally made field visits with the generalized public health nursing consultants or supervisors. In a large majority of the states the specialized nursing consultants made field visits with other persons in the special division as part of a professional team.

In every state, the specialized nursing consultants assisted in evaluating the nursing aspects of local health agency programs. In the majority of the states, this service was available to private health agencies. The majority of these evaluations were initiated by state health department members. Evaluation was accomplished by means of studies, surveys, and consultation. Evaluation was most often based on criteria developed by the state health departments, criteria developed by the American Public Health Association, and criteria developed by the National Organization for Public Health Nursing. Assistance to local health agencies following evaluation of the nursing aspects of their programs was most often given at the request of the local health agencies. When specialized nursing consultants visited local health agencies to give assistance following evaluation of the nursing aspects of agency programs, they gave this assistance by means of conferences with the public health nursing directors of the local agencies, conferences with the health officers and the directors of nursing, conferences with the representatives of more than one agency, and by demonstration.

Although giving direct nursing service to local health agencies was considered to be a responsibility in less than half of the states, some form of direct nursing service was actually being given by the specialized nursing consultants in more than half of the states.

TABLE 3

The Responsibilities of Specialized Nursing Consultants in 31 State Health Departments

Responsibilities	*State Health Departments*
Assisting in the evaluation of the nursing aspects of local health program	31
Planning and participating in educational programs	31
Planning field visits to local health agencies	30
Assisting local health agencies following the evaluation of nursing aspects of their programs	29
Preparing reports	29
Planning work with local health agencies	28
Giving consultation service to both public and private agencies	24
Administrative duties	22
Giving direct service to local health agencies	14

Without exception, published material regarding the responsibilities of specialized nursing consultants points out that administration is not a nursing consultant responsibility. However, the specialized nursing consultants had administrative responsibilities in a majority of the states.

In view of the responsibilities which specialized nursing consultants are expected to assume, consideration of the preparation and experience required for adequate performance of these responsibilities seemed in order. Not only should the specialized nursing consultants have advanced preparation and experience in their respective specialties but they should be thoroughly prepared and experienced in the total field of public health nursing, including supervision. Although none of the Civil Service or Merit System requirements for specialized nursing consultant positions met all of the standards for consultant positions established by the National Organization for Public Health Nursing, this information was not as significant as it seems, because in many states the actual preparation and experience of the specialized nursing consultants are far in excess of the Civil Service or Merit System requirements.

The possession of certain personal characteristics is also of importance. The

specialized nursing consultants need to have emotional maturity, a non-judgmental and permissive attitude, a genuine interest in and a liking for people, and a sense of humor.

CONCLUSIONS

From the information received from a majority of the state health departments it seemed reasonable to conclude that:

1. There is considerable confusion regarding the persons to whom the specialized public health nursing consultants are responsible.
2. Joint responsibility of the specialized nursing consultants to the division of public health nursing and the special divisions is the most prevalent organizational structure within which the consultants function and is considered to be the most satisfactory type of consultant assignment.
3. The method of determining specialized nursing consultant responsibilities is a democratic process.
4. It seems to be common practice for specialized nursing consultant responsibilities to be stated in written form.
5. There is considerable confusion regarding the methods by which the specialized consultants are expected to carry out their responsibilities.
6. The responsibilities of the specialized consultants are similar in character.
7. There is a marked degree of coördination of specialized nursing consultant work with other state health department personnel and with the local health agencies.
8. More consideration needs to be given to notifying local health agencies in advance of nursing consultant field visits.
9. More effort needs to be devoted to interpreting to local health agencies the benefits to be derived from the evaluation of health agency nursing programs.
10. More direct nursing service seems to be given to local health agencies than is compatible with the function of advisory personnel.
11. The advisability of the assumption of administrative duties by specialized nursing consultants needs consideration.
12. Civil Service and Merit System requirements for specialized public health nursing consultant positions are not consistent with present-day practice.

Clarification of the role and the status of the specialized public health nursing consultant is needed in the majority of state health departments. This clarification is essential in regard to the organizational structure within which she functions, her responsibilities, and the methods by which she is expected to discharge these responsibilities. Comprehensive study of these problems is needed on a nation-wide basis, to be followed by the establishment of generally accepted principles related to the work of the specialized public health nursing consultant in state health departments.

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Medical Care Insurance: Lessons From Voluntary and Compulsory Plans

Organization and Administration *

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MEDICAL care insurance has a long record. Since the middle of the 19th century voluntary plans of many kinds have been tried out on a large scale in numerous countries. Following the adoption of the first law in modern times in 1883, compulsory systems of varying scope have been developed in more than thirty countries. The basic characteristics distinguishing each type of plan are remarkably alike all over the world.

Voluntary plans are established through voluntary action of groups of people or of commercial enterprises and are administered by nonprofit voluntary associations set up for this purpose, by the management of private companies, or by other voluntary groups. They are open to all who wish to participate and meet the eligibility requirements set by the sponsoring organizations. On the basis of contractual agreements they furnish specified services or benefits to all those who are entitled to them through regular prepayment of the rates determined by the administrative bodies concerned.

Compulsory plans rest on national or, occasionally, state laws defining the broad policies and principles of administrative organization and are organized and supervised by agencies of the national or state governments. The administration of direct service is decentralized and in most countries entrusted to local semi-public agencies created for this purpose, rather than to public agencies. In general, such systems require all self-supporting persons belonging to specified socio-economic groups to be insured and to contribute to the cost in proportion to their earnings; and they require employers to share in the total cost according to a definite schedule. All persons covered have the legal right to obtain any or all of the services and cash benefits included in the programs.

Source material on both voluntary and compulsory plans is abundant, and scientific studies and appraisals of their operation are legion. It is therefore not too difficult to arrive at conclusions on the merits of the broad policies adopted for organization and administration of medical care insurance plans regardless of their auspices, provided that the investigator looks behind the pretentious facade of organization charts and resists the temptation to give his imagination free reign of interpretation. The major lessons that can be learned are twelve in number.

I. Medical care insurance is a fair, equitable, and practical method of organizing payment for clearly defined professional and hospital services. Its popular appeal in many countries can

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be attributed to widespread appreciation of the characteristics distinguishing insurance plans from public assistance programs.

Medical care insurance is a modern form of social action, substituting solidarity for individual effort and certainty for uncertainty. It is organized self-help to remove, or reduce, the financial burden which may arise from sickness, injury, or maternity. Equal advantages are offered to all who are eligible, regardless of their social and economic status, and certain services are provided, as of right, on the basis of membership, without obligation to repay the costs and, in most countries, without means test at the time of service.

II. In itself, insurance against the cost of medical care is a purely financial mechanism. But the method lends itself to the attainment of more than protection against the economic hazards of illness. The value of a medical care insurance plan depends on the degree to which it provides adequate service at reasonable cost. Cash is no substitute for care.

Cash indemnity plans, allowing stipulated sums of money up to a certain maximum toward the insured's expenses for specified professional services, hospital care, or both, fulfil economic functions that must not be minimized. But there they stop. In contrast, service programs combining organization of payment with organization of professional and hospital services meeting high standards can greatly contribute to the wider distribution of both preventive and treatment services, the promotion of psychosomatic medicine, the reduction of the frequency and duration of serious stages of illness, complications, and chronic ailments, the removal of the fear of want, and the prevention of poverty. If the good medical care taught by the leaders of the professions is to be practised generally, service programs must be emphasized and supplementary indemnification for medical care expenses be limited to such items as drugs, appliances, or certain materials.

III. To assure the highest quality of service, at the least expense compatible with adequacy, an effective "service organization" must be established close to each group of insured people. Such service organizations must be improved constantly in order to maintain standards representing both the best scientific thinking and the most advanced application of knowledge.

To adopt medical care insurance without simultaneous organization of professional and institutional services meeting high standards, is to turn the wheels of history back to the 19th century when scientific medicine was in its infancy and organization of payment for the relatively few services then available was all that could be accomplished. Despite the great scientific advances in the last 100 years there is still a deep-seated sentiment in favor of continuation of old patterns of medical practice, and there is again grave danger of unconditional surrender to the forceful argument that protection against the economic hazards of ill-health is the one and only problem to be solved by medical care insurance plans. To be truly useful, the method of insurance must be employed for the continued improvement of professional and hospital services. Only then will the people receive the best that medicine, dentistry, nursing, and the related professions have to offer.

All evidence points to the conclusion that group practice and regional organization of hospitals are the two methods holding greatest promise for the improvement of the quality of medical care. Their wider introduction, admittedly a difficult undertaking, is imperative, if for no other reasons than to determine the extent of their applicability and their mechanics. Freedom of experimentation is a prerequisite for

the extension of group practice. This principle always has been and always will remain the touchstone of progress in scientific medicine. It will be equally useful to advances in the social organization of medical care, and it is a "must" in any country cherishing the free-enterprise system.

IV. Large size of membership and representation of a cross-section of the population are essential to both establishment and successful operation of medical care insurance plans.

If risks and resources are to be pooled effectively, many and varied socio-economic groups representing a cross-section of the population must be included in one plan, and members must be accepted regardless of income. The greater the number of persons covered by the plan and the more diverse the occupational and economic groups represented in the membership, the better the chances of spreading the risks, increasing the income from prepayments, keeping the rates within reasonable limits, providing for broad scope of service, and paying adequate compensation to the participating members of the health professions and the hospitals.

V. Broad scope of service pays. It is necessary because the needs of individuals vary greatly. It serves to prevent serious illness in many cases, to restore the health and earning capacity of many insured people promptly and adequately, and to reduce the demand for relatively expensive services, requested owing to the lack of other equally effective but less costly services.

It is true that programs with limited scope of service are easier to establish than programs with broad scope, but their relatively lower costs are deceptive, as a part of the expenses for all the services needed by the insured is merely shifted to other sources, not infrequently to public agencies operating tax supported services.

The large majority of all medical care insurance plans abroad have started out with a much broader scope of service than is offered at present by any but a few plans in this country. From the very beginning, most of the foreign programs covered both physicians' services and hospitalization, and many also included limited dental care, services of professional nurse-midwives, and supply of certain drugs and appliances. Over the years, they have constantly extended the range of these provisions and added others, in order to make the service comprehensive. But they have never attempted—or claimed—to provide "complete" medical care, because they were fully aware of the natural limitations of the method of insurance and were operating in a setting precluding establishment of a unified service for the individual in health and sickness. At the risk of laboring the obvious, it must be stated that a modern medical care insurance plan must be designed to preserve and promote health by preventive services and to reduce, if not prevent, serious stages of illness, complications, and prolonged illness, by early diagnosis and prompt and thorough treatment. Plans which fail to lay the foundation for the achievement of these objectives are sickness insurance plans of 19th century vintage, even though they are sometimes advertised as health insurance.

VI. Self-government and democratic control furnish the basis for effective management of compulsory as well as voluntary medical care insurance plans.

Both principles have been violated frequently in the past and are still more honored in the breach than the observance in some countries. In "consumer-conscious" countries all administrative powers originally were vested in bodies representing the insured and the employers, and only much later was clearly defined administrative authority given to the representatives of the health professions, especially the physicians and

dentists. In "producer-conscious" countries, on the other hand, professional associations, hospitals, or industrial companies often assumed full administrative responsibility or provided only for token representation of those paying all or part of the costs.

Neither lay control of professional services nor professional control of general policies and economic aspects is conducive to successful development and effective management of medical care insurance plans. All groups concerned must have seat and voice in the administrative bodies of service programs, and the powers, duties, and functions of each group must be clearly defined.

VII. Administrative separation of medical care insurance plans from other community health services creates serious problems, some unavoidable and others preventable.

As membership in medical care insurance plans grew and the number of administrative agencies multiplied, a "state within the state" evolved, with segmentation of administration of health services, division of authority, and provision of service according to artificial demarcation of eligibility rather than the needs of the individual, friction between insurance organizations and public agencies, and waste of administrative effort. Insurance organizations gained in prestige and financial power, and many public health departments became dwarfs in comparison, but despite this shift of influence the health needs of all the people in the community were not met.

Proximity without community can be defended where a small fraction of the population is covered by a medical care insurance plan. It is the lesser evil in countries without well developed and fully protected career service in public administration. The disadvantages of such a situation can be mitigated by the establishment of coördinating committees, composed of representatives of all medical care insurance plans and all public and voluntary agencies operating health services in a given area, provided this inter-agency committee does not itself develop into a new sprawling agency.

VIII. Professional and hospital services must be administered by a single agency.

Professional and hospital services are inter-dependent. Their administrative separation may easily result in differences in eligibility requirements for the two types of service, dissatisfaction on the part of the insured, and high cost of management. The insured is anything but impressed by fractionalization of services and multiplicity of bills. To him, illness is an indivisible disaster and not an aggregate of "items of service." Many of the administrative functions can easily be performed by one staff instead of two, with considerable savings in overhead.

Unified administration of all services covered by insurance programs is the rule abroad but rare in this country. The neutral observer of the contemporary scene in this country can only express the hope that the hyphenation of Blue Cross and Blue Shield plans will soon be followed by consolidation. The argument that separate agencies of this type are necessary to prevent domination by one group does not stand up under close scrutiny. As ample experience with programs of public medical care in this country has shown, the legitimate interests of both the medical and related professions and the hospitals can easily be safeguarded if a single agency is charged with overall responsibility and utilizes specialized divisions and technical advisory committees for administration of specific services.

IX. Provisions must be made for the initial and continued training of administrative personnel, in general, and of personnel for key positions, in particular.

In almost every country the training of personnel for key positions in the

administration of medical care insurance plans was sadly neglected at first and organized haphazardly later. There was a widespread belief that possession of a degree in medicine qualifies a physician for the position of medical director of a service program, that experience with a commercial insurance company is sufficient preparation for the management of the business aspects of service programs, and that aptness comes with the office. Institutions of higher learning were slow to adjust their curricula to new needs and new opportunities. Pertinent subject matter was incorporated in the plans of instruction in the social sciences relatively early but was added to the curricula of medical and related schools only at a very late date. The slowness of action on the part of institutions of higher learning forced the agencies in charge of medical care insurance plans to set up their own courses or schools that, quite understandably, were of the vocational type derided by many university professors.

X. The contributory principle, one of the outstanding characteristics of medical care insurance, is limited in applicability.

The contributory principle is feasible only for people able to make regular contributions out of earnings or other income, and it is difficult to apply in thinly settled areas. Contributory insurance against the cost of medical care is unsuited to cope with such catastrophes as widespread and severe epidemics. It cannot meet all the needs arising out of serious and prolonged sickness, such as mental illness and tuberculosis, as the incidence and severity of such conditions are hard to predict, the probability of future losses is difficult to measure owing to the unusually great variability of costs, and the expenditures involved are very high. However, the method of group prepayment can be employed on a very broad scale, if the contributory principle is abandoned and general tax funds are used to meet the cost of specified services to certain groups, such as the recipients of public assistance, the medically needy, or war veterans. Under such a policy, both the service organization and the administrative machinery maintained by a medical care insurance plan are utilized by public agencies, which make regular prepayments out of general tax funds on behalf of designated groups.

XI. Simultaneous operation of nonprofit voluntary medical care insurance plans for persons earning more than a stated amount and of a compulsory system for all other self-supporting persons in the same country, a compromise adopted in a number of countries, has few merits and many disadvantages, especially if only the low-income groups are covered by compulsory plans.

Such a policy perpetuates the old evil of different systems for different socioeconomic groups. Inevitably, it results in the insurance of the more favorable risks with relatively less need for service in the voluntary plans, while the less favorable, if not the poorest, risks requiring much service are concentrated in the compulsory plan. The operation of both types is gravely complicated, as eligibility must be checked and rechecked in each case, numerous transfers must be made from one system to the other owing to fluctuations in income, and the methods of collecting the contributions and the administrative records must be changed constantly. For these reasons many foreign countries require certain occupational groups, such as industrial workers, to be insured regardless of income, or set income limits for membership in compulsory plans relatively high. Some provide for voluntary membership in the official programs, others authorize continuation of certain types of voluntary plans, and still others follow both policies.

XII. Medical care insurance in itself, no matter how wide the scope of its service

and how comprehensive the coverage of the population, does not constitute a broad health program.

To be successful, medical care insurance must rest on the firm foundation of a nation-wide system of full-time health units designed to maintain and improve health through mass prevention, especially through sanitation of man's physical environment, and through mass information on healthful living and health resources, and to furnish other services essential to the health of the community. It must be developed together with a well rounded and balanced system of clinics, hospitals, and related facilities meeting high standards, and with provision for education of a sufficient number of competent physicians, dentists, nurses, and related groups.

Medical care insurance, then, is part of a broad health program. The health program, in turn, must be linked to a comprehensive system of social insurance providing for income maintenance in case of such hazards as temporary disability resulting from sickness, accident, maternity, and long-term disability, including invalidity, due to sickness and accident. As social insurance is expanded, public assistance tends to decline in volume and cost, but the need for such provisions remains for a small proportion of the population.

Historically, medical care insurance is neither the first nor the last stage in the social organization of medical care since the end of medieval feudalism and the era of "spiritual man." In the first stage, public medical care, financed out of general tax funds and administered by public agencies, was reintroduced by every country paying attention to health problems. As a rule, such systems provided for the building and maintenance of certain types of hospitals, the operation of limited service programs for the poor, and some medical care necessary for the control of certain diseases. In the second stage, voluntary medical care insurance was initiated and regulated in a score of countries and at the same time public medical care was expanded. As their limitations became apparent, voluntary insurance plans in many countries received increasing, and often substantial, subsidies out of general tax funds and in this process came to be standardized and closely supervised by official agencies. In the third stage, compulsory medical care insurance was introduced for certain socio-economic groups. This action was taken because enough experience had accumulated to show the weakness of the public assistance approach and the limitations of voluntary insurance. Voluntary medical care insurance plans were evaluated by measuring the degree of protection furnished in return for regular prepayments, rather than by counting the number of people eligible for some "benefit," and by determining the proportion of the population receiving comprehensive service. As a rule, compulsory medical care insurance plans were developed as integral parts of comprehensive systems of social insurance and public assistance and were operated in conjunction with systems of public medical care varying in scope. Need and demand for public medical care proved to develop in inverse proportion to the scope of service, coverage of population, and rates of contributions under medical care insurance programs. They increased in countries fostering voluntary insurance or possessing compulsory systems limited in coverage of population and scope of service. Hence, the great expansion of public medical care in many foreign countries. The fourth stage of development was ushered in with the adoption of public medical care as the predominant system, as in Sweden, or of public medical care for all, with discarding of the insurance device for support of health services, as in Great Britain.

It is true that methods of organization, as such, are no export articles

ready for indiscriminate use in any country in the world. It is equally true that careful and unbiased study of the vast experience with different methods of organizing medical care offers every country ample opportunity not only to avoid repetition of mistakes made elsewhere but to choose and improve the very method most suitable for its own requirements.

Inter-American Statistics Seminar

The Inter-American Seminar for Biostatisticians held in Santiago Chile, September 25–December 15, 1950, was a coöperative project of the Government of Chile, the United Nations Statistical Office, the Economic Commission for Latin America, the World Health Organization, the Pan American Sanitary Bureau, the Inter-American Statistical Institute, and the National Office of Vital Statistics of the U.S.P.H.S.

The seminar was organized primarily for biostatisticians from South America in order to assist governments there to develop more adequate statistical systems. In addition to lectures and discussion groups and the interchange of technical knowledge in the fields of vital and health statistics, training included field trips, laboratory working groups, and study of the statistical operations in agencies of the Chilean government.

Among the instructors were: Nora Powell and Octavio Cabello of the United Nations Statistical Office; Jose Janer, Chief of the vital statistics office in Puerto Rico, representing the World Health Organization; Juan Alejandro Nimo, specialist in statistical education, representing the Inter-American Statistical Institute; and Charles G. Bennett, Consultant on vital and health statistics of the U. S. National Office of Vital Statistics.

Air Pollution—The Status Today*

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NINETEEN hundred and forty-nine and 1950 have been banner years in the field of air pollution. During the past two years, nine national technical meetings devoted to the subject of air pollution were held (Table 1). More than 220 technical papers on this subject were presented and are now in the process of publication. Six major bibliographies and reports (Appendix A) have been made available to the public. This contribution so far surpasses that of any previous decade, that an explanation of this rapid expansion of interest in air pollution is needed.

TABLE 1 (a)

National Technical Meetings Held in the United States in 1949 and 1950 at Which Four or More Air Pollution Papers Were Presented *

Meeting	*Date*	*Place*
American Chemical Society	Mar. 28–29, 1949	San Francisco, Calif.
Manufacturing Chemists' Association	Apr. 19–20, 1949	New York, N. Y.
American Medical Association	June 8, 1949	Atlantic City, N. J.
Stanford Research Institute	Nov. 10–11, 1949	Pasadena, Calif.
Industrial Hygiene Foundation	Nov. 18, 1949	Pittsburgh, Pa.
American Meteorological Society	Jan. 3–4, 1950	St. Louis, Mo.
University of Michigan School of Public Health	Feb. 6–8, 1950	Ann Arbor, Mich.
U. S. Technical Conference on Air Pollution	May 3–5, 1950	Washington, D. C.
Manufacturing Chemists' Association	May 18–19, 1950	New York, N. Y.

* In 1950 the Smoke Prevention Association met in Montreal, Quebec, and there were at least five other national technical meetings in the United States in 1949 and 1950 at *which less than* four papers on air pollution were presented, e.g., American Industrial Hygiene Association, American Public Health Association, American Petroleum Institute, Society of Automotive Engineers, and American Conference of Governmental Industrial Hygienists.

LOS ANGELES SMOG

This increase of attention to air pollution as a nation-wide problem was initiated by the emergence in 1945 of Los Angeles smog as a local problem of the first magnitude. Los Angeles had had smog for several decades prior to 1945, but it affected a relatively small population group and then only infrequently. Year by year, the more frequent recurrence of a progressively more irritating smog, affecting a rapidly increasing population, projected what had previously been a minor annoyance into a real nuisance affecting a large population group. At this juncture, the public pointed an accusing finger at the local oil and gas industry as being the cause of their troubles. In 1947, these industries wisely financed an investigation by the Stanford Research Institute to prove or disprove the accusation and to outline the steps necessary to abate any causative factors for which the industry could be held responsible.

* Presented before the Industrial Hygiene Section of the American Public Health Association at the Seventy-eighth Annual Meeting in St. Louis, Mo., November 2, 1950.

In the same year (1947), public pressure caused the State of California to enact a law empowering counties to set up Air Pollution Control Districts, having boundaries the same as one or more counties deciding individually or jointly to do so. The Los Angeles County Air Pollution Control District was activated and, by February, 1948, promulgated its initial rules and regulations. A little later that year, Stanford Research Institute issued its first annual report of progress on the Smog Investigation. Reports of county and city investigations also appeared at this time. Thus, by the fall of 1948, Southern California was the center of university, private, and public research in air pollution and the California public had become air pollution conscious. Industry, faced with the necessity of complying with a new set of restrictions on stack emission, realized that the time had come to pool its knowledge for the solution of such problems.

DONORA SMOG EPISODE

It was at this time (October, 1948) that the Donora smog episode, with its death toll of 20, occurred. Just as the Los Angeles smog had stirred the West, the Donora smog aroused the hitherto complacent East. The Public Health Service sent many members of its Industrial Hygiene Division to Donora to conduct a full scale investigation, an investigation which consumed some 5 months time. The State of Pennsylvania augmented its own Industrial Hygiene staff and also investigated the disaster. The events at Donora, recalling as they did the Meuse Valley disaster of 1930, were popularized by the mass circulation magazines of the country. As a result, the whole nation was made air pollution conscious.

DEFENSE RESEARCH PROJECTS

The Los Angeles and Donora episodes were thus the events that pointed to the need for a nation-wide marshalling of air pollution knowledge. It was fortuitous, therefore, that by 1949 several lines of investigation unrelated to each other (and to the previously conceived notion of the air pollution field) had each come to a convenient "stock-taking" point. It made good sense at this particular time to write up research related to air pollution and to make available information hitherto "classified" by defense authorities or scattered through a maze of restricted research reports. Several of these lines of investigation had had their start in studies required by American and British Armed Services. They covered such diverse subjects as methods of generating screening smokes of optimum opacity, the mechanism of the dissemination of these smokes; the design of respirator adsorbents and filters for both gases and smokes, and means for testing adsorbents and filters. Even studies of the mechanism of rain and storm formation were included, particularly with regard to the role of condensation nuclei in the process.

Other somewhat different studies had been initiated by the United States Atomic Energy Commission and dealt with the safe dispersal of radioactive waste gases from high stacks into the atmosphere; the development of high efficiency filter media; and studies of the toxicology of uranium and its derivatives, involving the development of novel means of dust measurement.

SIGNIFICANCE OF RECENT SYMPOSIA

The principal benefit realized from the many meetings and papers of the last two years has not been primarily the presentation of new material but rather the consolidation and organization of much scattered existing knowledge into the papers and progress reports required to round out these several symposia. As a result, by this time next year, when the last of this year's contributions will

have finally been published, the public health officer or engineer meeting an air pollution problem will for the first time have, in the volumes listed in Table 1 and Appendix A, a comprehensive library on air pollution.

Appreciation of the importance of air pollution was evidenced in 1950 by two additional air pollution "firsts": the first air pollution columnist and the first meeting of the Smoke Prevention Association of America under its new name, the Air Pollution and Smoke Prevention Association of America. The columnist is L. C. McCabe and his column appears bi-monthly in *Industrial and Engineering Chemistry*. The Association's change of name occurred at its Montreal, Quebec, annual meeting in May, 1950. This Association has in the past been composed in the most part of city and railroad smoke-control officials. The action taken represents a real advance in their concept of the ultimate scope of their duties and responsibilities.

RELATION OF AIR POLLUTION TO PLANT LIFE—SULFUR DIOXIDE DAMAGE

In reporting the present status of knowledge in the broad field of air pollution, only the high spots can be covered. The simplest way to do this is to subdivide arbitrarily the art into the subdivisions of Table 1 and discuss each category separately. The first such subdivision is the relation of air pollution to plant life and livestock. Here, major interest centers about sulfur dioxide and the effect of fluorine and fluorides on vegetation and on the health of livestock fed on such vegetation. Another current problem arises from the widespread use of plant sprays and dusts harmful to certain other species of plant life or toxic to men and animals. The oversprays from such operations have become wind-borne and been carried beyond the confines of the fields being treated.

The history of damage to vegetation by sulfur dioxide is a long one and is well documented by reports starting with that of the Selby Smelter Commission of 1915, through the work of the National Research Council of Canada (Ottawa), published in 1939, that of the Boyce Thompson Institute (Yonkers, N. Y.), and of the Department of Agricultural Research of the American Smelting and Refining Company (Salt Lake City, Utah), published during the 1930's and 1940's. One of the several recent reviews of SO_2 damage to crops (Katz[1]) summarizes the subject in the following fashion:

> In exposures of sufficient duration to concentrations higher than about 0.40 ppm, it (SO_2) may be toxic to sensitive plants at periods during the growing season when physiological activity is high and conditions for rapid absorption of this gas by the leaves are at a maximum. However, low concentrations, in the range up to 0.10 to 0.20 ppm, have been demonstrated to be without influence on plant life, in the absence of visible markings.

FLUORIDE DAMAGE TO LIVESTOCK

A somewhat different situation prevails with respect to atmospheric fluoride damage. Here most of the recent interest has had to do with damage to the health of livestock grazing in fields exposed from time to time to an atmosphere having a fluoride concentration high enough to transfer fluoride to vegetation. In these cases, the vegetation itself may not be damaged, nor would there be sufficient fluorine in produce from such fields (or in the meat or milk from animals) to harm human beings eating them as random components of a balanced diet, otherwise free of excess fluorine. When an animal continues to graze on high-fluorine fodder or when a human being's milk, meat, and vegetable supply are all from high fluorine content sources, the excessive fluorine intake can cause and has caused damage, particularly to cattle and sheep whose food intake is relatively high. The safe atmos-

pheric fluorine level to prevent this is subject to discussion but is most likely lower than the threshold for plant damage. In his review of data on this latter phase of the problem, P. W. Zimmerman [2] concludes:

> The threshold concentration (of HF) which can be tolerated indefinitely by plants is difficult to determine. It probably falls somewhere around 0.05 ppm. Most plants can be exposed for three or four hours to 0.1 ppm of hydrofluoric acid gas in air without showing injury. If, however, during the fumigation period the concentration rises slightly above 0.1 ppm, injury may result.

OTHER EFFECTS ON VEGETATION

Zimmerman [2] has also summarized information on the effect on plants of other gases such as chlorine, hydrogen sulfide, ammonia, ethylene, carbon monoxide, and mercury vapor. Local exposures of vegetation to these gases have accidentally occurred from time to time.

The adverse effect of the soot and tar content of smoke-laden city air on the leaves of shade trees is today so taken for granted that park supervisors select only the more resistant species for planting along streets and in parks.

EFFECT OF AIR POLLUTION ON HEALTH—EYE IRRITATION IN LOS ANGELES

Coming now to the question of the effect of air pollution on health, attention will first be given to the reports of the Los Angeles and Donora smog investigations, since they represent the most comprehensive studies available to us. The outstanding effect of Los Angeles smog on health has been eye irritation. The second Stanford report [3] concludes:

> At least nine substances capable of causing eye irritation have been identified in the Los Angeles air. Although no one of them is present in sufficient quantity to produce eye irritation of itself, all nine substances in combination have been shown by Smog Chamber tests to cause definite eye irritations, even when present in quantities found in the Los Angeles atmosphere. Among the substances in the Los Angeles air which—either singly or in combination with others—may cause eye irritation when present in sufficient amounts, are formaldehyde, ammonia, sulfur dioxide, sulfur trioxide, nitrogen oxides, acrolein, ozone, carbon particles, and oil.

These investigators feel that further research now under way will reveal the mechanism of eye irritation by Los Angeles smog.

THE DONORA REPORT OF THE PUBLIC HEALTH SERVICE

The Donora report of the Public Health Service [4] concludes that:

> It seems reasonable to state . . . that while no single substance was responsible for the October 1948 episode the syndrome could have been produced by a combination, or summation of the action, of two or more of the contaminants. Sulfur dioxide and its oxidation products, together with particulate matter are considered significant contaminants.

The Public Health Service investigation took place after the conclusion of the October, 1948, episode. During these several months, SO_2 did not reach toxic levels. The report includes an estimate of daily SO_2 discharge during the episode. The authors of the report have concluded that this estimated rate of SO_2 discharge was insufficient to have allowed SO_2 by itself to reach a toxic level during the episode. In a recent discussion, one of us [5] has taken exception to this finding and pointed out some of the following reasons why sulfur dioxide may be the etiological agent:

> Observations in industry, where the maximum period during which the workers are exposed to sulfur dioxide normally does not exceed eight hours per day, are the basis for the generally accepted maximum allowable concentration of ten parts per million for this substance, and for the generalization that it exerts its principal effects upon the upper respiratory tract. It is conceivable that illness might be produced by continuous exposure for several days to concentrations heretofore considered non-toxic. This concept appears to be borne out by the fact that most of the illness did not begin to appear until after the

second day of persistence of the smog. The prolonged exposure and latency might also account for the fact that the pathology involved the lower respiratory tract to a far greater extent than usually occurs in industrial exposures to sulfur dioxide.

Computations which we have made, based on reasonable assumptions, confirm this opinion.

AIR CONTAMINATION STANDARDS

With the exception of the above studies; the work of Eisenbud, *et al.*[6] on chronic lung disease from exposure to beryllium of persons living in the vicinity of beryllium extraction plants; and the well known action of pollen and air-borne allergens, practically all of our knowledge of the toxic action of dusts, gases, and fumes comes from the industrial hygiene field. The M.A.C.'s of industrial hygiene are based on 8 hour per day exposures. Dr. Irving Tabershaw[7] has suggested air pollution values one-tenth the 8 hour day M.A.C. to compensate (in the case of permanent residents) for the loss of the recuperation achieved during the 16 hours per day the industrial worker is away from work.

One lesson we have learned is that air pollution harms the aged and infirm before it affects the more vigorous elements of the population. Our objective must therefore be an atmosphere safe for the weakest segment of the population, even if this requires us to divide our 8 hour M.A.C.'s by still another factor of safety in translating them from the healthy to the infirm.

Anyone now desiring to evaluate the effect of air pollution on the respiratory tract, the bones, the skin, or the eyes; to assess its alleged carcinogenic or psychological effects; or to read up on the adverse effects of the diminution of sunlight by smoke may well begin his investigation with the annotated bibliography "Biological Aspects of Air Pollution."[8] When it is realized that over 320 different references on these subjects are abstracted in that publication, the reason why there is no further discussion of them here should be obvious.

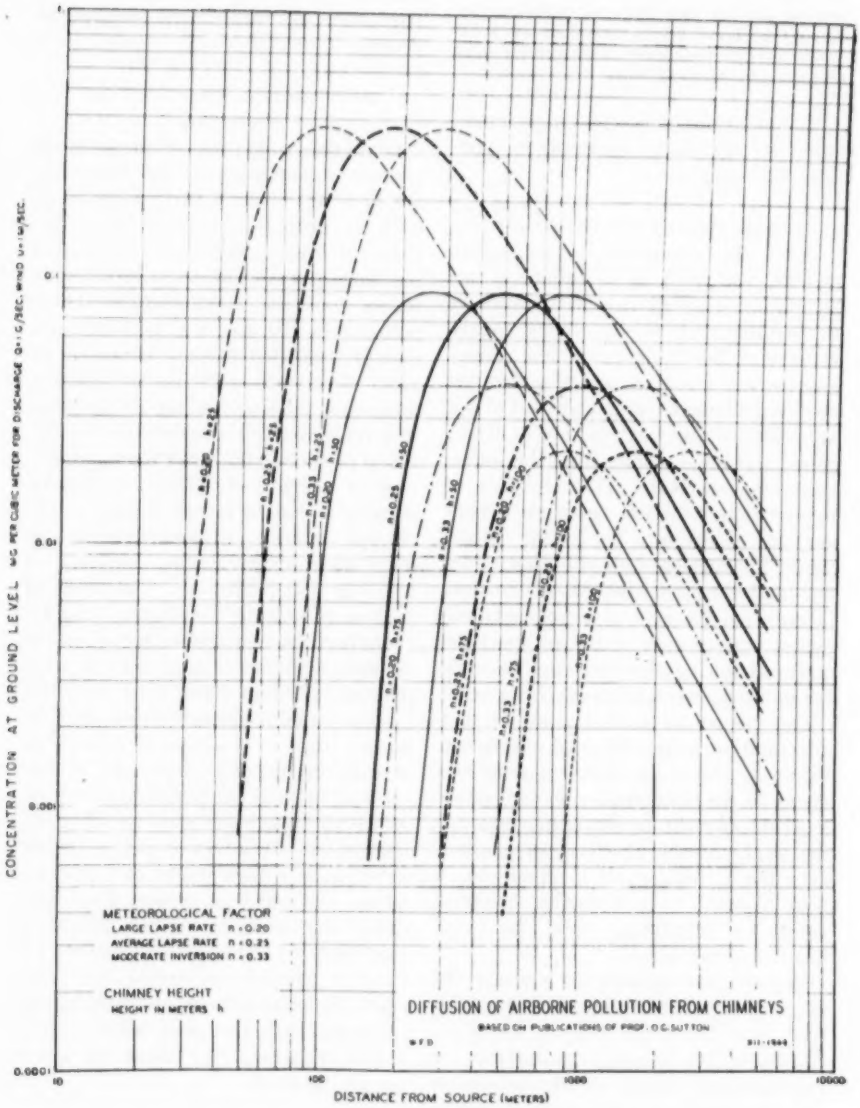
MICRO-METEOROLOGY AND AIR POLLUTION

Of all the subdivisions of air pollution, greatest recent progress has been, and is still being, made in that having to do with its relation to meteorology. We have for decades been able to measure the rate of emission of pollution at a source and the concentration of the polluent in the air of a polluted area distant from that source. However, we have heretofore had no satisfactory means for relating the one to the other in a theoretically reasonable framework, nor of predicting the latter from a knowledge of the former. Both can now be done to a limited extent, thanks to the current interest of meteorologists in micro-meteorology. This reverses a trend in that profession. The needs of long-range weather forecasting had for years been leading meteorologists in the opposite direction of large-scale weather phenomena. Important as it was, this preoccupation nevertheless prevented intensive study of the types of small-scale weather phenomena important in the solution of local air pollution problems. As we learn more and more about micro-meteorology, it serves to emphasize the importance of high stacks as a primary means for achieving ground level dilution of contaminants to within acceptable safe limits. Davidson[9] and Bosanquet, *et al.*[10] have demonstrated that high stack discharge velocity and temperature cause the "effective stack height" to be a predictable distance above the actual top of the stack.

JET DILUTION OF STACK EFFLUENTS

Several types of stack discharge problems are now recognized. The simplest is that of jet dilution of gases and smoke in the immediate vicinity of a stack.

FIGURE 1


CONCENTRATION AT GROUND LEVEL
DISTANCE FROM SOURCE (METERS)
METEOROLOGICAL FACTOR
LARGE LAPSE RATE n = 0.20
AVERAGE LAPSE RATE n = 0.25
MODERATE INVERSION n = 0.33
CHIMNEY HEIGHT
HEIGHT IN METERS h
DIFFUSION OF AIRBORNE POLLUTION FROM CHIMNEYS
BASED ON PUBLICATIONS OF PROF. O.G. SUTTON

The studies of McElroy and his coworkers [11] show that:

For undisturbed flow . . ., at 25 stack widths or stack diameters (downwind from the stack) the expected maximum concentration is about 10 per cent of that in the stack, and at 50 widths or diameters, it is about 5 per cent. Maximum relative concentrations at adjacent buildings were comparable to the maximums in undisturbed streams where building-generated turbulence was a minimum, but in gen-

eral they (the usual concentrations) were but one-sixth to one-tenth of these (maximum) values.

DILUTION BY TURBULENT MIXING

Beyond the zone of jet diffusion, mixing of gases and smokes by turbulence becomes predominant. Davidson[9] has not only presented additional data on jet diffusion, but has also well summarized our knowledge of turbulent diffusion. His chart for the solution of Sutton's equations for turbulent diffusion is presented as Figure 1. With regard to this figure, he notes:

> For other values of emission (than 1 gram per second), the concentration will change in direct proportion and for other wind speeds (than 1 meter per second) it will change in inverse proportion. (A wind speed of 2 mps will result in concentrations 0.5 times those shown on the chart) . . . Curves for other heights and meteorological factors than those shown may be drawn by noting that: 1. The maximum concentration at ground level varies inversely as the square of the height of the chimney . . . (and) 2. The value of the maximum concentration at ground level is independent of the meteorological conditions but the distance from the source at which this maximum occurs increases as conditions change from large lapse rate to strong inversion.

The meaning and significance of lapse and inversion conditions has been set forth in this year's report of the Committee on Air Pollution of the Engineering Section of the A.P.H.A., the work of Dr. Harry Wexler, entitled "Meteorology and Air Pollution."

DUST DISPERSION AND PREDICTION OF SMOG

Theories of the dispersal of solid particles from stacks have been formulated by Croft[12] (1934), Baron, *et al.*[13] (1949), and Bosanquet, *et al.*[10] (1950). In the intervening years, little has been added although a number of soot-fall studies have been published. In 1945, one of us[14] showed that the geographic distribution of soot-fall in the city of New York could be predicted from a knowledge of causative factors.

Theories of the cause of smog formation are well advanced and have been put to the test in Los Angeles, Donora, St. Louis, Pittsburgh, and several other cities. An index of meteorological conditions conducive to smog formation has been developed in the Stanford study of Los Angeles. A number of investigators have shown the correlation between visibility, smoke, and meteorological conditions. Means for predicting and improving visibility at airports is of primary importance to aviation. The suggestion made in Congress that the Civil Aeronautics Authority investigate air pollution arises from this need.

So-called "meteorological control" of the emission of pollution, which was first undertaken at western smelters in the 1920's, was developed to a fine art at the Trail (B.C.) Smelter as a result of the findings of the international arbitration tribunal appointed to investigate crop exposures to SO_2 caused by its effluent. The report[15] of this investigation is a classic of valley micrometeorology and helps explain the plight of many polluted valley communities. The control techniques, outlined in this report, call for the curtailment of emission of SO_2 upon the occurrence of a prescribed set of weather conditions, proved likely to be the prelude to an SO_2 exposure.

AIR SAMPLING AND ANALYSIS

Wherever a satisfactory sampling or analytical procedure is now to be found in industrial hygiene practice, it will prove adequate for the needs of air pollution sampling and analysis. Wherever the methods in use by industrial hygienists are unsatisfactory, they will be equally inadequate for air pollution studies. Standard industrial hygiene laboratory methods are so completely described in the various industrial hygiene textbooks and in the papers of Table 1, that no useful purpose would be served by repeating them here. The

principal difference between industrial hygiene and air pollution sampling practice is the emphasis in air pollution studies on samples of long duration. This has resulted in the development of automatic continuous recording meters for gaseous constituents and automatic continuous filtration devices for particulate matter. Devices of this type are needed because the pollution of an area should preferably be measured around the clock, day after day, until the pattern of the pollution is well established. Continuous meters are most useful when they are so completely automatic that they can be installed at isolated locations with only infrequent service visits and can electronically report their findings to a central office.

The lack of such special equipment should not deter one from undertaking an air pollution investigation. A sufficient number of more conventional short duration samples taken at representative times of the day and night can usually be interpreted to yield sufficient information about the pollution and its source.

Another difference between industrial hygiene and air pollution sampling is the degree of mobility of equipment required. In industrial hygiene practice it is sufficient to transport the sampling equipment to a factory. The factory can invariably be relied upon to supply the electrical power needed for most sampling devices. In sampling for atmospheric contaminants, it is preferable to be able to sample at any point in the countryside accessible to automobile. Therefore, either portable electric generating equipment, carried in ordinary automobiles or automobiles especially equipped with sources of power, are almost a must if any substantial amount of sampling is to be undertaken. In one recent air pollution investigation where several mobile sampling cars were employed, radio-telephonic communication was maintained between cars and their control point. The use of a specially built mobile air pollution laboratory automobile is the ideal means of conducting field studies.

NEW TOOLS FOR SAMPLING AND ANALYSIS

The obvious trend in the analysis of field samples is the employment of as many advanced methods as can be made available. The desirability of applying electron microscope, mass spectrometer, proton-scattering apparatus, spectroscopy of all types and similar analytical tools, available only in well financed research centers, bespeaks the value of establishing close coöperation between the agency making field investigations and the best equipped local centers of research.

A number of new sampling procedures have been developed by the Stanford investigation in Los Angeles. They include a portable venturi scrubber, a new type of dust camera, and a wet-type electrostatic precipitator. All are completely described in the publications of the Stanford Research Institute. Only future field trial by other investigators will tell whether these new methods will prove to be of value.

Recent research has extended our knowledge of aerosol properties and measurement to smaller particle sizes than had heretofore been studied. The range from 1 μ to 0.1 μ and to a limited extent below 0.1 μ has been explored by new optical and sonic methods. New light-scattering properties of ultra-small particles have been discovered. Although there is no immediate employment of this work in air pollution laboratory technique, application to practice may take place in the near future.

SCRUBBERS, ADSORBERS, AND DUST COLLECTORS

It took 23 separate papers at the United States Technical Conference on Air Pollution to cover the subject of equipment for preventing the emission

of pollution to the atmosphere. All the principal types of dust separating devices, gas adsorbers, and scrubbers were described. Equipment manufacturers stand ready at present to tackle any dust, gas, fume, or mist suppression problem which may arise. Because, in some cases, the cost of adding this equipment may make continuance of operation of the controlled process economically burdensome, there is no feeling of complacency among manufacturers, but rather a realization that simpler and cheaper control equipment must be developed.

As each manufacturer and process developer strives to present the performance of his own equipment in the best possible light, we have reached the point where it takes an expert to compare the efficiency of different control devices. There is no agreement among manufacturers as to the basis for the determination of collection efficiency. The greatest need at present is, therefore, more uniformity in the rating of control equipment so that the plant engineer may reasonably predict the result of adding a specific control device to a specific industrial process. This problem is likely to remain with us for a long time for it is a difficult one.

GOVERNMENTAL REGULATION OF AIR POLLUTION

Governmental regulation of air pollution takes two general forms: setting up standards of maximum permissible emission into the atmosphere, and the so-called "permit system" whereby all new installations capable of emitting pollution to the atmosphere require governmental approval prior to installation and operation. The latter approval is usually evidenced by some form of "permit" to operate the equipment.

In general, industry is opposed to the "permit system," basing its opposition on the premise that it is sufficient for them to keep within the maximum permissible emission standards. It takes the position that how it achieves such compliance is of no concern of any governmental agency, and that the agency's only interest should be whether or not compliance with the standard has been achieved.

The principal argument for some form of "permit system" is that we know from experience that it achieves results, and that systems of control which do not put the administrative agency on official notice of each new pollution source, do not achieve the results desired. No administrative agency is so well staffed that it can ferret out each new pollution source by field observations alone. Even where, as a compromise, the administrative agency is notified of each new source *after* it has started operation, the task of attempting to test the emission of each such stack is prohibitive and impossible of accomplishment with the personnel available to most administrative agencies. With a small administrative staff, the best that can be accomplished is to waive emission testing on the great majority of new installations where plans and specifications filed for approval in advance of installation disclose the use of good engineering practice for the control of emission, and a field inspection after installation shows the installation to be according to the approved plans. Under these conditions only especially large, important or controversial installations need have their stack emissions tested to determine conformance with the standards. These problems have been thoroughly discussed in the Legislative Panel of the United States Technical Conference on Air Pollution (Table 1).

LOS ANGELES CONTROL DISTRICT RULES

The most important and influential air pollution legislation in the country is the California law of 1947 and the Los Angeles County rules of 1948 (both subsequently amended). The three

TABLE 1 (b)

Meeting	*Publication of Papers*
American Chemical Society	*Indust. & Engin. Chem.* Nov.-Dec. 1949. Vol. 41 Nos. 11 & 12
Manufacturing Chemists' Association	Privately published for members only
American Medical Association	
Stanford Research Institute	Proceedings of the First National Air Pollution Symposium *
Industrial Hygiene Foundation	*Transactions Bulletin 11* (1949)
American Meteorological Society	To be published as a Society Monograph
University of Michigan School of Public Health	American Industrial Hygiene Ass'n. Q. March 1950 Vol. 11 No. 1 *Indust. Med. & Surg.* March, 1950 Vol. 19 No. 3
U. S. Technical Conference on Air Pollution	Papers to be published by McGraw-Hill
Manufacturing Chemists' Association	Published privately for members only

* Suite 332, 612 South Flower Street, Los Angeles, Calif.

TABLE 1 (c)

Meeting	*Relation of Air Pollution to Plants and Livestock*	*Effect of Air Pollution on Health*	*Relation of Air Pollution to Meteorology*	*Air and Stack Gas Analysis-Methods and Instruments*	*Means for Preventing Emission of Pollution*	*Governmental Regulation of Air Pollution*	*General Discussions—Public Relations Surveys*	*Total*
American Chemical Society	2	1	4	2	6	3	1	19
Manufacturing Chemists' Association	–	2	1	2	6	3	2	16
American Medical Association	–	1	1	1	–	1	–	4
Stanford Research Institute	3	3	6	6	2	1	1	22
Industrial Hygiene Foundation	–	1	3	1	–	–	4	9
American Meteorological Society	–	–	12	1	–	–	–	13
University of Michigan School of Public Health	1	1	3	2	11	–	1	19
U. S. Technical Conference on Air Pollution	14	14	8	28	23	9	–	96
Manufacturing Chemists' Association	–	1	1	1	5	2	5	15
Total	20	24	39	44	53	19	14	213

features of these rules that elevate them above the hundreds of smoke and fly-ash control ordinances and rules throughout the country are those which (a) limit the number of pounds per hour of dusts and fumes which may be emitted by *any industrial process;* (b) limit the quantity of sulfur that may be emitted; and (c) require plan filing and approval of installations capable of adding any form of pollution to the air. In the East, Cleveland, Ohio, and Niagara Falls, N. Y., have ordinances covering all forms of air pollution, and in St. Louis, Mo., air pollution regulation is covered by a separate ordinance from that covering smoke and fly-ash.

SMOKE ABATEMENT

In the field of smoke and fly-ash control, the most influential ordinances are those of St. Louis, Mo., and Pittsburgh, Pa., and the most recent important one is that of New York, N. Y. All three embody the so-called "permit system" for new installations, specific smoke and fly-ash emission standards, and limitations on the volatile content of coals that may be burned. The New York rules contain fly-ash emission standards based on weight of emission per 1,000 lbs. of steam generated, an approach differing from the ordinances of most other cities.

The principal recent technological advances in smoke abatement have been sponsored by Bituminous Coal Research, Inc. (The National Research Agency of the Bituminous Coal Industry). The studies it has sponsored at Battelle

Memorial Institute (Columbus, Ohio) have led to improved methods of using over-fire jets to control smoke and to the development of the BCR Stove. Similar work at the University of Illinois has developed the Illinois Smokeless Furnace. Where local ordinances have required the use of less smoky fuel, the coal industry has been able to supply it; and the public has written off the additional cost of such premium fuels as the cost of a cleaner environment. Ultimately, however, economics and the conservation of our natural resources will demand that communities learn to burn common as well as premium fuels in a smokeless manner.

CONCLUSION

Air pollution control is truly forging ahead. We know how to do the job, but frequently have our hands tied when it comes to applying our know-how. Industry is more alert than ever before to its responsibility to be a good neighbor. Less and less is heard of the argument that "we were here first and those people knew it when they built their homes near us." One evidence of this more enlightened attitude is the recent sponsorship by the American Iron and Steel Institute of an air pollution study by the Industrial Hygiene Foundation of America to include steel mill processes and the atmospheric contaminants they emit.

In the field of administrative regulation, the immediate task is to coördinate the efforts of city, county, and state administrative groups. Last year, both the New Jersey and Maryland legislatures authorized air pollution studies, and three air pollution bills were introduced in the 81st Congress. It is highly likely that cities and counties throughout the country will make their air pollution control regulations more stringent. They will be forced to rely heavily on their local and state public health officials for leadership and guidance. It behooves you all, therefore, to take advantage of the newly organized fund of air pollution reference material so as to be well informed when the challenge arises in your community.

APPENDIX A

PRINCIPAL PUBLICATIONS OF 1949–1950 RELATING TO AIR POLLUTION (OTHER THAN THOSE LISTED IN TABLE 1)

Annotated Bibliographies:

Cumulative Bibliography on Atmospheric Pollution and Aerobiology, Meteorological Abstracts and Bibliography (January and February) 1950, Vol. 1, Nos. 1 and 2—43 pp.

Biological Aspects of Air Pollution, Public Health Service (April) 1950—118 pp.

Reports:

Air Pollution in Donora, Pennsylvania, Public Health Bulletin No. 306, Public Health Service, 1949—173 pp.

Smoke Abatement: Current Practices and Regulations, Report 48-2, American Municipal Assn., Chicago, Ill. (Feb.) 1949—25 pp.

The Smog Problem in Los Angeles County, Second Interim Report by Stanford Research Institute, Western Oil and Gas Assn., Los Angeles, Calif. (August) 1949—64 pp.

Handbook on Aerosols, U. S. Atomic Energy Commission, Washington, D. C.—147 pp.

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Survival of Selected Enteric Organisms in Various Types of Soil*

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WITH the rapid development of urban areas, sewage has been discharged in increasingly large volumes into the streams and rivers in all parts of the country. In the irrigation areas of the country the only source of water in many instances has become badly contaminated with sewage. In many of these areas vegetables are irrigated with polluted water and conceivably the resulting vegetables may carry enteric disease organisms.

Although only a few epidemics have been charged to contaminated vegetables, it is possible that unrecognized endemic enteric infections or sporadic cases may be caused by eating vegetables grown on contaminated soils. Whether such vegetables have or have not been responsible for enteric disease, it is not good public health practice to allow the irrigation of vegetables with waters containing large volumes of untreated sewage.

Although some of the western states have arbitrarily set regulations, there are no official national standards. It is certain that the standards for drinking water are not applicable. There is a definite need for standards for irrigation waters, to be sure that vegetables, as harvested, do not carry any pathogenic organisms.

Before standards of bacterial quality of irrigation waters are established, it is necessary that an investigation be made of the bacterial flora of sewage and sewage-contaminated waters to seek possible indicator organisms. The use of the coliform organisms as indicators of sanitary quality of drinking water, may be applicable in measuring the public health hazards of irrigation waters, but a careful survey should be made to determine their significance and the possible use of other alternative organisms.

In the first phase of these studies, samples of fresh sewage and sewage effluents were examined both qualitatively and quantitatively for various organisms typical of sewage.

The usual methods for culturing enteric bacteria from fecal material were employed. A description of methods, although various modifications were used, is not pertinent to this presentation because none of these methods are employed in a subsequent presentation of these studies. It is sufficient to state the kind of organisms isolated from sewage.

The following genera or groups were isolated from sewage samples examined over a period of a year on a routine basis: *Pseudomonas;* paracolon; *Alkaligenes; Salmonella:* enterococci; and coliforms. Colonies, with the exception of the coliforms which were believed to

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be members of the above groups, were picked from agar plates. A collection of 672 cultures were checked by cultural methods. Out of these groups, 275 were classified as *Pseudomonas*, 34 as *Proteus*, 11 as paracolon, 17 as *Alkaligenes*, and one as *Salmonella typhosa*.

Although large samples of sewage were concentrated, the isolation of enteric pathogenic types was sporadic. As judged by East Lansing sewage, none of the pathogenic types were found in sufficient quantity in sewage to be used even for measuring the public health hazard of raw sewage itself. Certainly this infrequency would eliminate them as test organisms in irrigation water where the sewage has been materially diluted by river water.

These studies confirm previous work showing that enteric pathogens, such as *S. typhosa*, can be isolated from raw sewage without too much difficulty. The fact that such enteric pathogens were isolated, emphasizes the need of standards for irrigation waters. Such waters should be freed of pathogenic bacteria for the protection of farmers and consumers of vegetables which otherwise might become contaminated and thus constitute a health hazard.

The only organisms found in sewage in large numbers were the coliforms and the enterococci.

Inasmuch as the waters used for irrigation travel in relatively shallow ditches, in close contact with agricultural soil, the bacterial population of the water will consist of the residual of the initial population from the sewage augmented by the bacteria picked up from the soil. If coliform organisms are to be used as indicators for measuring sewage contamination, it becomes necessary to know their behavior in soil, and soil-contaminated water.

Furthermore, inasmuch as the organisms may have to travel through soil, it would be well to know the behavior of known enteric pathogens, such as *S. typhosa*, in relation to that of the test organism.

A number of reports have been made on the survival of *S. typhosa* in soils, but it is essential that virulent strains be tested in the same soil and at the time when the test organisms are checked, so that comparable data on survival times can be obtained.

In the first soil studies, a sandy loam was placed in thirty lysimeters, located on the college farm lands. These lysimeters were galvanized iron cylinders 40 in. in diameter and 18 in. deep.

Raw sewage and various types of sludge were added to the soil in the lysimeters as follows:

No. of cylinders	*Treatment*	*No. of Treatments*
3	Raw sewage	1
3	Raw sewage	6 at weekly intervals
3	Dried sludge	1
3	Primary effluent	1
3	Digester sludge	1
3	Raw sludge	1
3	Raw sludge	6 at weekly intervals
3	Activated sludge	1
3	Activated sludge	6 at weekly intervals
3	No treatment	none

The dosage, where liquids were used, consisted of 10 gallons per cylinder. Dried sludge was added at the rate of 20 tons per acre. After treatment, the upper 6 in. of soil was thoroughly hoed to obtain a uniform mix of the soil and sewage waste.

The tests consisted of moisture determinations, plate counts, using standard nutrient agar, streptococcus plate counts, using various experimental media, decimal plantings in quintuplicate in lauryl tryptose broth and lactose broth for coliform organisms and various azide broths including Perry's S.F. broth for streptococci. All media were incubated at 35–37° C. for 24 to 48 hours depending upon the medium.

All these tubes (used for coliform tests) showing gas were streaked on Levine's eosin methylene-blue agar to determine the incidence of *Escherichia coli* and *Aerobacter aerogenes*. The writers realize the inaccuracies of eosin

methylene-blue agar for the differentiation of the above genera, but for this purpose a rough estimate was sufficient. Furthermore, on this medium, the presence of metallic colonies is nearly 100 per cent accurate for *E. coli*.

The sediment from the azide broth tubes was Gram-stained and examined for the presence of streptococci. When chains of four or more cocci were found frequently, it was assumed that the organisms were streptococci. The writers are aware that such a standard for identification is purely arbitrary and that the failure to find chains in fields of micrococci does not necessarily rule out the possibility that the cocci are not streptococci.

All bacterial counts and the MPN indices of broth coliform organisms and streptococci are reported for dry weight of soil so that variations in the moisture content of the lysimeters would be eliminated. During the 10 weeks of these experiments the total bacterial counts of all lysimeters, irrespective of the kind or amount of treatment, remained at approximately the same level in spite of the fact that in the cases of raw sludge, digested sludge, activated sludge, and dried sludge treatments, large quantities of organic matter in various stages of break-down were introduced.

During the course of testing, the MPN indices for coliform organisms gradually diminished although they never reached zero. For example, in the lysimeters not receiving sewage treatment, the initial coliform index was 1,750 and at 70 days, the index had dropped to 13.5. In the sample receiving raw sludge, the first index obtained 14 days after treatment was 51,400 and at the close of the experiment, it was 246. The coliform indices for the other treatments were somewhat comparable.

There was a reduction in the coliform indices during treatment over the period of testing; however, the reduction trend was neither rapid nor constant for any treatment. An examination of colonies on eosin methylene-blue agar failed to show any significant shift from *Escherichia* to *Aerobacter* colonies as a result of time. The *Escherichia-Aerobacter* ratios in the untreated soil were similar to those obtained for the various treated soils.

No streptococci were present in the untreated soil. In the soil receiving raw sewage, tests for the streptococci were negative after 14 days based on 100 gm. dried soil. When raw and digested sludge were used, the streptococci were present in the soil after 70 days. The streptococcus index for the soil receiving raw sludge dropped from 6,620 to 20 in 70 days. These data are particularly interesting in that the longevity of the streptococci was apparently increased by the introduction of organic matter into the soil.

The coliform indices for the lysimeters receiving weekly sewage treatments remained at a fairly constant level throughout the entire 6 weeks of tests. The soils receiving raw sludge remained at a higher coliform index than did those receiving activated or dried sludge. There was no build-up of the coliform organisms even with the excessive dosage of sewage waste.

The streptococcus index levels were somewhat similar to those obtained with one treatment of sewage. When raw sludge was added to the soils weekly, the streptococcus indices remained at approximately the same level. Raw sludge-treated soil carried the highest streptococcus indices.

These studies showed that when sewage-laden water was added to soil, the indicator organisms remained continuously at a high level. It was demonstrated that *E. coli* remains in the soil for long periods of time and, although diminution in numbers occurs, large numbers remain 2 months after the application of sewage.

The enterococci died out rapidly although they were still present in low concentrations in soil receiving raw sludge 70 days after treatment. The enterococci showed promise as test organisms; however, the numbers present, in comparison to coliform organisms, made their use questionable.

At this point, a new streptococcus test medium was found. Mallmann and Seligmann[1] reported that a medium called dextrose azide broth (Rothe) gave much higher indices than did lactose broth, azide broth (Mallmann), and S.F. broth (Perry and Hajna). This medium was used in all subsequent tests for enterococci. Microscopic checks were always made, because occasionally spore-forming rods grew in this medium.

In the next series, cylinders containing a Fox sandy loam were placed in a greenhouse to eliminate such variables as moisture, temperature, and possible contamination from birds and rodents. In these studies, sterilized raw sludge was added to the cylinders in concentrations of 0, 2, 5, 10, and 20 per cent, based on total weight. Sterile sludge was used, so that the seedings of test organisms would be the same for all cylinders. Duplicate cylinders were used. Each container was weighed at regular intervals and water was added until initial weights were restored. Pure cultures of *E. coli* (7 strains) and *Streptococcus faecalis* (5 strains) were mixed and equal amounts of the mixture were added to the cylinders of soil. Bacteriological examinations were made each week for 11 weeks. The data for the survival of *E. coli* and *S. faecalis* are presented in Tables 1 and 2, respectively.

The average coliform MPN index at the start of the experiment was 632,000. The indices fell more rapidly in the control than in the 20 per cent concentration of sludge. The coliform indices at the end of 11 weeks ranged from

TABLE 1

Average MPN of Coliform Organisms Expressed in Logarithms per 100 gm. Dried Soil from Fox Sandy Loam

Week After Seeding	Per cent of Sterile Sludge Added to Fox Sandy Loam				
	0%	2%	5%	10%	20%
0	5.642	5.897	6.077	5.985	5.435
1	6.288	5.881	6.550	6.200	6.345
2	6.149	5.549	6.169	7.775	5.220
3	5.431	5.466	5.733	7.765	6.180
4	5.011	5.309	5.408	6.740	5.315
5	4.579	4.574	5.027	5.700	5.590
6	3.462	4.863	5.481	6.290	5.225
7	3.465	3.821	5.027	6.070	4.425
9	4.028	4.246	4.738	5.250	4.960
11	3.196	3.036	4.359	5.035	3.810

TABLE 2

Average MPN of Streptococci Expressed in Logarithms per 100 gm. Dried Soil from Fox Sandy Loam

Week After Seeding	Per cent of Sterile Sludge Added to Fox Sandy Loam				
	0%	2%	5%	10%	20%
0	5.231	5.341	5.499	6.360	6.435
1	5.559	5.349	6.305	6.790	7.375
2	5.406	3.511	3.919	4.925	6.480
3	4.720	4.738	5.939	6.070	5.240
4	1.807	1.838	2.692	4.420	3.715
5	2.015	0	1.827	3.295	3.540
6	0	0	0	3.745	2.975
7	0	0	0	3.960	3.680
9	0	0	0.826	1.000	3.355
11	0	0	0.977	1.200	0.700

TABLE 3

Average MPN of Coliform Organisms Expressed in Logarithms per 100 gm. Dried Soil from Various Types of Soil

Weeks	Oshtemo Sand	Isabella Loam	Fox Sandy Loam	Brookston Clay Loam	Muck
0	4.965	6.405	5.642	6.185	6.680
1	5.430	6.060	6.285	5.450	5.950
2	5.130	6.455	6.149	5.190	5.995
3	4.660	6.875	5.431	5.280	5.800
4	4.295	5.575	5.011	4.635	4.975
5	4.185	5.090	4.529	4.380	4.975
6	3.360	3.490	3.462	4.250	4.350
7	3.850	4.595	3.465	4.475	4.820
9	2.340	3.955	4.028	2.855	4.155
11	0.805	3.715	3.196	3.465	3.920

1,550 in the control to 10,900 in the cylinders receiving 10 per cent or more of sludge.

The streptococci persisted for 4 to 5 weeks in 2 per cent sludge and control cylinders respectively, whereas they persisted for 11 weeks in the cylinders containing 10 and 20 per cent sludge. For the cylinders containing 10 per cent sludge, the initial streptococcus index was 2,290,000 and at the end of 11 weeks it was 10.5. For the 20 per cent sludge cylinders, initially it was 2,270,000, and at the end of 11 weeks it was 5.02.

These data show that increasing the organic content of the soil causes an increase in the longevity of the streptococci. The coliforms persist in high numbers in all concentrations of sludge in the soil.

Because of the variations in the longevity of the streptococci, due to variations in the organic content of the same soil, tests were made to see if a constant dosage of organisms would cause different longevities of the organism on different types of soils. Five soils were tested, namely, Oshtemo sand, Isabella loam, Fox sandy loam, Brookston clay loam and muck in the same manner as before.

The coliform indices (Table 3) in the Oshtemo sand fell from 91,300 to 6.31 in 11 weeks; however, in the other four soils the indices at the end of the tests ranged from 1,560 in Fox sandy loam to 8,360 in muck.

The streptococci (Table 4) survived in the Oshtemo sand, the Fox sandy loam and muck for 5 weeks, in the Brookston clay loam for 7 weeks, and in Isabella loam for 9 weeks. These data show that the streptococci die out within a period of 11 weeks whereas the coliform organisms survive.

The literature reveals that the longevity of *E. coli* has been checked in soils by many investigators. Houston[2] reported that *E. coli* may persist in soil for

TABLE 4

Average MPN of Streptococci Expressed in Logarithms per 100 gm. Dried Soil from Various Types of Soil

Weeks	Oshtemo Sand	Isabella Loam	Fox Sandy Loam	Brookston Clay Loam	Muck
0	4.620	5.990	5.231	5.685	5.935
1	4.815	5.845	5.559	4.200	5.325
2	5.510	6.020	5.406	4.820	5.145
3	3.210	6.060	4.720	4.115	5.145
4	2.205	4.775	1.807	3.030	3.105
5	0.950	1.685	2.015	3.465	2.060
6	0	1.240	0	2.835	0
7	0	2.205	0	0.865	0
9	0	0.815	0	0	0
11	0	0	0	0	0.675

months after it gains access, but does not multiply there. Savage [3] studied the effect of tidal mud on the viability of *E. coli* and reported that the organisms were found in the proportions of one per gram for 3 months after the initial pollution. Rovis [4] contaminated soil with *E. coli* isolated from feces and reported that the organism survived for several months. Young and Greenfield [5] controlled the moisture content of soil samples after seeding with *E. coli*. They reported that, in several of the experiments, the coliform bacteria survived for 3 years and for 7 years in one experiment. Koser [6] planted 20 cultures of fecal coliform bacilli into tubes of sterile soil which were moistened from time to time with sterile water and incubated in the dark at 18–20° C. for 4 months. At the end of this period, they were still viable. Skinner and Murray [7] reported that *E. coli* from fresh cow feces or pure cultures disappeared from soil in 200 days after inoculation. Gray [8] examined six samples of soil for coliform bacteria which had not been contaminated by either animal or human fecal matter, and found that all samples contained *A. aerogenes* and five yielded *E. coli*. Kulp [12] reported coliform bacteria viable 3 years and 7 months after the initial seeding in soil. Klein [13] reported a pure culture of *E. coli* viable after 410 days in soil.

The value of coliforms for measuring health hazard of vegetables taken from soils receiving sewage contamination would appear small. The streptococci would appear to have value as they do decrease and ultimately disappear. If they survive longer than such enteric disease producers as *S. typhosa*, they would be useful indicators of health hazards.

Accordingly, experiments were conducted to compare the longevities of *S. typhosa* and the enterococci. The same soil types were used as in the previous experiments. Four strains of *S. typhosa* (A, D, E, and F) were obtained from the Michigan Department of Health. These were virulent cultures containing Vi antigen. Each soil container received one treatment of raw sewage and *S. typhosa* suspension.

The coliform indices show the same trend as before, with indices ranging from 3,680 to 30,200 at the end of 40 days. The streptococci (Table 5) disappeared by the 40th day of testing. *S. typhosa* disappeared by the 50th day in the Oshtemo sand, by the 12th day in the Miami loam, and by the 19th day in Brookston clay and muck.

These data show that the enterococci persisted in the soil longer than did the typhoid bacilli. In this particular experiment the enterococci persisted approximately twice as long. In an earlier experiment using pure cultures of *S. faecalis* and *S. typhosa* the enterococci persisted longer, but the pure cultures of the enterococci were less resistant than those found in sewage.

It is interesting to note that the *S. typhosa* strains did not lose Vi antigen during their sojourn in the soil.

The longevity of *S. typhosa* in the soil observed in these experiments is not

TABLE 5

Average MPN of Streptococci Expressed in Logarithms per 100 gm. Dried Soil in Various Types of Soil Receiving One Treatment of Raw Sewage and Seeding of S. typhosa

Days after Seeding	*Oshtemo Sand*	*Miami Sandy Loam*	*Brookston Clay Loam*	*Muck*
0	5.016	5.537	5.779	7.029
5	3.853	3.943	4.936	4.541
12	2.847	3.105	4.242	2.992
19	1.306	2.839	2.023	2.904
26	2.727	3.712	3.116	1.484
33	1.336	0	2.994	0
40	0	0	0	1.465

TABLE 6

Average MPN Typhoid Bacillus Expressed in Logarithms per 100 gm. Dried Soil in Various Types of Soils Receiving One Treatment of Raw Sewage and Seeding of S. typhosa

Days after Seeding	*Oshtemo Sand*	*Miami Sandy Loam*	*Brookston Clay Loam*	*Muck*
0	6.758	6.715	7.117	7.369
5	0	2.593	1.336	5.327
12	0	0	1.544	4.706
19	0	0	0	0
26	0	0	0	0
33	0	0	0	0
40	0	0	0	0

different from that found by other workers. Mais [9] in 1905 found that *S. typhosa* could survive in natural soils in large numbers for about 20 days and in small numbers for 70 to 80 days. Melick [10] in 1919 found that the longevity of the typhoid bacillus in soil depended upon the source and the strain. He reported that the time varied from 29 to 58 days. Creel [11] in 1912 reported that, under ideal conditions, the typhoid bacillus lasted 31 days in the soil.

SUMMARY

The only organisms, other than the coliform organisms, found in sewage that could be used as indicators of fecal contamination were the enterococci.

Coliform organisms were found to persist in soil for long periods.

Enterococci were found to die out rapidly in the soil.

Virulent typhoid bacilli died out in soil much more rapidly than did the enterococci.

The longevity of the coliform organisms, the typhoid bacilli, and the enterococci in soil was prolonged with an increase in the organic content of the soil.

Enterococci would appear to be good indicators of public health hazard from sewage in soils and on vegetables.

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Consumer Practices in the Use of Milk*

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MILK consumption throughout the countries of the world varies from almost none to about 3½ cups per day per person on the average. The United States ranks among the top dozen countries on the basis of per capita milk supplies—but is not, as some have supposed, at the head of the list. Certain of the Scandinavian countries, Switzerland, the Netherlands, and possibly a few others exceed us in this respect.

Present-day consumption of milk in the United States averages about 250 quarts a year per person, or 2¾ cups per day.[1] Forty years ago we used about 2 cups a day. These figures include not only fluid milk, but the fluid milk equivalent (in protein and calcium) of evaporated, condensed, and dry milks, and of milk products such as cheese, cream, and ice cream. The long-term increase in the total over the 40 year period reflects chiefly the larger quantities of products other than fluid milk. But during the early 1940's, fluid whole milk consumption rose sharply to a peak in 1945, an increase of about one-fourth over 1935–1939. The middle 1940's were years of relatively high incomes when supplies of many consumer goods which normally compete with food were restricted. Consumption of meat, fruits, and vegetables was also exceptionally high in 1945 and 1946. Since then, there has been some falling off in the per capita quantities of milk and its equivalent but consumption is still above the pre-war level.

It is important to know whether these increases are spread evenly over the whole population or whether they represent a greater consumption by certain groups. Some information on this question comes from a comparison of diets of a cross-section of urban families in 1948 and 1942.[2] These studies provided information on income as well as on food consumption. Comparison showed that, at all income levels, larger quantities of milk or its equivalent were used in 1948 than in 1942. It looks as though the efforts of nutritionists and other health workers have borne fruit.

EFFECT OF INCOME

At any one time, however, when families have more money, they tend to buy more milk and certain of the other dairy products. Compared to other major food groups, increases in milk (equivalent) consumption at successively higher income levels were fairly large in 1948, especially up to about the $4,000 income level. The influence of income was most marked for cream and ice cream, next for cheese and fluid milk, in that order; consumption of evaporated milk, after an initial rise, decreased as family income rose. For city families in general, buttermilk consumption declined with rising income.

These differences in consumption at

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TABLE 1

Item:	Unit	Average purchased quantity used per person in a week, spring, 1948 urban families in 2 income classes		$5,000–$7,500 as a per cent of $1,000–$2,000
		$1,000–$2,000	$5,000–$7,500	
Milk, fluid, whole	qt.	2.15	3.41	159
Buttermilk	qt.	0.13	0.07	54
Milk, evaporated	lb.	0.68	0.33	49
Cream	lb.	0.09	0.22	244
Ice cream	lb.	0.13	0.29	223
Cheese	lb.	0.22	0.38	173
Butter	lb.	0.16	0.28	175

different income levels are illustrated by Table 1.

These shifts in average consumption at different income levels are explained in part by changes in the percentage of families using the various products. Ice cream purchases for use at home for example, were reported by one-fourth of the families with incomes between $1,000 and $2,000, but by three-fifths of those having $5,000 to $7,500.

For cheese, comparable figures for the two income classes were 67 and 88 per cent respectively. Moving in the opposite direction, are figures for evaporated milk, used by about two-thirds of the households in the lower income class and by about two-fifths in the higher class; and for buttermilk, which was used in about one-fifth of the households in the lower income class and in a decreasing proportion as incomes rose. As might be expected, nearly all these urban families used fluid whole milk in some amount except for a small proportion in the lower income groups.

Because in a national sample, the proportion of families living in the South is greater in the lower income classes than in the higher classes, trends in consumption with income in part reflect regional food habits as well as the influence of income.

CONSUMPTION IN 4 CITIES

Geographic differences in consumption of dairy products are shown by recent studies of family diets made by the BHNHE * in four large cities.[2] Approximately 250 housekeeping families of 2 or more persons reported their food consumption for a week during the winter of 1948 in Birmingham, Buffalo, Minneapolis-St. Paul, and San Francisco. As found in earlier studies, more total milk was used in the North and West than in the South. Families in San Francisco used an average of 5.7 qts. in terms of milk equivalent a week per person, those in Buffalo and the Twin-Cities 5.1 qts. and those in Birmingham 4.2 qts.

Interesting differences occurred in consumption of individual dairy products in the four cities, especially as between Birmingham and the other three. Some, but not all, of these differences are related to lower incomes; others to food habits and preferences. More than twice as much fluid whole milk per person was used in the 3 cities of the North and West as in Birmingham where, incidentally, prices were highest. On the other hand, buttermilk figured more prominently in the southern diets, both in quantity used and in the percentage of families using this food during the week.

Birmingham families also used more evaporated milk, about twice as much per person as the runner-up, San Francisco. From 74 to 90 per cent of the Birmingham families in different income

* Bureau of Human Nutrition and Home Economics.

groups reported using this product during the week.

One out of 6 Birmingham families used nonfat dry milk, in amounts averaging about a pound a week or the equivalent of about 5 qts. on the fluid basis. This was an important contribution to their diets. The percentage of families using dry milk decreased from 32 per cent at the lowest income level to 7 per cent at the highest. These figures show that the economical aspects of dry milk were appreciated, especially by the low income families. They suggest also that people can and will learn to use this form of milk when it is available and its value is understood. Nonfat dry milk was introduced into the Birmingham market in the early 1930's and was advertised as an economical way of obtaining cultured buttermilk. In none of the other 3 cities did any household report the use of this food.

In this inter-city comparison the Twin Cities stood out as having the largest consumption of cream and ice cream and the smallest of evaporated milk. Butter consumption was also highest in this city.

WIDE VARIATIONS IN MILK CONSUMPTION

The discussion thus far has dealt with averages—averages for the country as a whole, for urban families or those in individual cities, or for separate income groups. For a real understanding of milk consumption, we need to see what these average figures represent.

Distributions of families by the amount of milk they use indicate wide differences in consumption among families. In the national study of urban diets in 1948, every family reported the use of milk in some form during the week. About 30 per cent used less than a pint (of milk or its equivalent) a day per person and 14 per cent more than a quart. Even families with relatively high incomes used widely different amounts of milk. Of the families with incomes between $5,000 and $7,500, 24 per cent used less than a pint a day per person, and 23 per cent, a quart or more.

Milk consumption on farms probably varies at least as widely as in city households, depending largely on whether or not cows are kept. Among farm families in a Georgia county studied in 1945,[3] 14 per cent had no milk and 53 per cent had some, but less than a pint a day per person; only 10 per cent had more than a quart. Low milk consumption has been found in other studies of families living on small cash-crop farms where incomes are generally low and the ownership of milk cows not high.

On the other hand, on larger or more general-type farms, where home-produced milk is available, consumption is likely to be higher. Even so, in a southern Ohio county, where 86 per cent of all the families kept cows, 25 per cent of the families used less than a pint of milk a day per person, and 30 per cent, more than a quart.[3]

Surveys of the food consumption of school children have shown repeatedly that many of them have only small amounts of milk. A recent nutrition survey in New York State, in which over 4,000 10th grade children provided 3 day diet records, revealed that 16 per cent of the boys and 23 per cent of the girls had less than a pint of milk a day; 39 per cent of the boys and 22 per cent of the girls had a quart or more.[4] Fourth graders did somewhat better than 10th graders, with fewer children consuming very small amounts.

The same survey provided data on one day's food intake of pregnant women, homemakers, and industrial workers, in selected areas of the state.[5] Consumption of no milk or less than ½ cup was reported by 11 per cent of the pregnant women, 21 per cent of the homemakers, 34 per cent of the men workers, and by 41 per cent of the women workers. Of the 700 or more pregnant women providing diet records

in New York City, 39 per cent had less than a pint of milk a day.

DO WE USE ENOUGH MILK?

Figures like these are samples of what is found again and again in surveys of what people eat. And they help to answer the question, Do we use enough milk? They explain why, in estimates of the nutritive value of diets, calcium is the nutrient most often low as compared to recommended intake. In the 1948 surveys, 4 out of 10 city families did not have food that furnished the amount of calcium recommended by the National Research Council. If facts were available on the amount of calcium obtained from the baking powder and the water supply used by these families, this proportion might be lower. Such studies point up the obvious answer to the question asked—We do not use enough milk, as long as adolescents, pregnant women, and other groups with high nutritional needs are getting as little milk as these studies indicate. As for those milk drinkers in the "quart or more category" whose intake exceeds the average, who among us would suggest that they are using too much?

Milk is by far the most economical source of calcium in diets, and provides good returns in many other nutrients too. In the spring of 1948, urban families spent not quite a fifth of their total food budgets on dairy products not including butter, yet they got almost two-thirds of the total calcium in their diets from these products, almost a half of their riboflavin, and one-fourth of their protein. Other nutrients too are contributed by milk.

The problem, then, is to bring up milk consumption where it is too low. Because of the economic aspects, this may mean promoting higher levels of nonfat dry milk in bread; or arrangements for making milk available at low cost to special groups. Even more important perhaps is the educational job to be done, not only in showing homemakers how to use the cheaper forms of milk, but in convincing people of the nutritional importance of this food.

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Use of Statistics on Prematurity in Tennessee*

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THE collection, tabulation, and analysis of statistical data is a time-consuming and expensive administrative practice. It should never be engaged in, as is so often the case, for the sole purpose of recording data or to furnish employment to statisticians. When used properly, this phase of any good program offers us a tool with which we can measure the present, record our history and within reasonable limits forecast the events of the future. This science like all others is developing rapidly. When viewed critically in the mirror of today, we see its fading shadow falling back into antiquity and at the same time we can see through that mirror and catch fleeting glimpses of a bright road leading into the future.

We must not permit any facet of this service to lag. In the field of prematurity rapid strides are being made in the development of comparable and useful data. The revision of the standard birth certificate which we placed in effect January 1, 1949, permits the study of prematurity by birth weight and weeks of gestation. Prior to January, 1949, we were forced to consider as premature any birth in which gestation was recorded as less than 9 months. The recent agreement by national and international groups [1-3] with relation to certain definitions opens the way for compilation of comparable data for the entire United States and perhaps for several nations. All of this progress having been made during the past two years, our data, based on these new definitions, are limited accordingly. In spite of this limitation we shall attempt to show how these changes affect our statistics and what kinds of data are useful in our premature programs.

It can be said without fear of successful contradiction that the quality of statistical data, dependent as it is upon several reporting sources, is proportionate to the practical use made of those data. Improvement in recording of months of gestation, and more recently in weeks of gestation and birth weight, is demonstrated in Table 1 and Figure 1. This shows the percentage of live births premature in Tennessee for the 6 years 1944–1949. Periods of gestation of less than 9 months were reported by those responsible for the delivery for only 3.0 per cent and 2.8 per cent for the years 1944 and 1945, respectively. In general these figures remained static for the next three years. In 1949, when we began using new and more clearly defined definitions,* the percentage of live births premature, based on weight alone, was 7.6 per cent and on weeks of gesta-

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* The definition of a premature infant recommended by the Association of Maternal and Child Health and Crippled Children's Directors is as follows: "A premature infant should be defined for purpose of statistical evaluation as a live born infant weighing 2,500 grams or less or 5½ pounds or less at birth."

TABLE 1

Number and Percentage of Live Births Reported To Be Premature by Years, 1944–1949, Resident Data, Tennessee

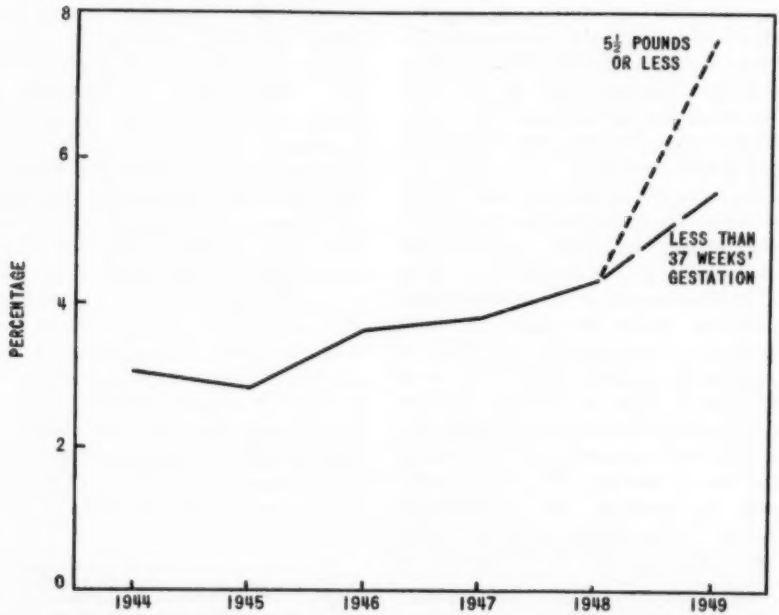
Year	Live Births	Premature		Measure of Prematurity
		Number	Per cent	
1944	67,100	2,018	3.0	Less than 9 months
1945	64,101	1,817	2.8	" " " "
1946	75,839	2,764	3.6	" " " "
1947	85,284	3,274	3.8	" " " "
1948	81,490	3,535	4.3	" " " "
1949	82,307	6,255	7.6	5½ lbs. and less *
1949	82,307	4,513	5.5	Less than 37 weeks

* The birth weights of 1,645 births of unknown weight but known gestation have been estimated according to the distribution of births of known weight of the same period of gestation, for white and colored groups. The birth weights of 634 births of unknown weight and unknown gestation have been estimated according to the weights of the entire group with known weight for white and colored groups.

tion alone the percentage was 5.5. Thus, it is obvious that the size of our premature problem is much greater than was thought to be the case by general practitioners. Actually, we know now the problem has been more clearly defined and our job of doing something about it is made correspondingly easier.

As has been indicated above, these data are of value only to the extent that they can be used to plan a program for

FIGURE 1—Percentage of Live Births Reported To Be Premature * by Years, 1944–1949, Resident Data, Tennessee



* Premature for 1944–1948, less than 9 months' gestation; for 1949, less than 37 weeks' gestation or 5½ pounds or less.

the reduction of infant mortality in general. Since most of our infant mortality is compressed into the neonatal period, and since more than 50 per cent of these deaths are in infants prematurely born, let us examine our problem more carefully.

Using weight data for 1949, the percentage of premature live births was found to be higher for colored births (10.0) than for white births (7.1). It has been recognized for some time[4, 5] that there is a racial difference and that the definition of 5½ lbs. and less (2,500 gm. and less) may not be satisfactory for the Negro infants. However, mortality in the weight groups is needed to define those experiencing excessive mortality.

Using the weight definition for prematurity, in 1949, 46.8 per cent of the stillbirths were premature. Thus, considering both live births and stillbirths there were 7,048 premature births in Tennessee in 1949, or 8.4 per cent of the total births. When we consider these facts, added emphasis is given to the problem.

To find out more about the situation, we have studied the frequency of prematurity according to age of mother and order of birth, by counties, etc. Young mothers (under 20 years of age), and mothers of any age having their first child, had premature delivery more frequently than did those in other groups. This information alone is of value in our program, but additional information regarding causes of premature delivery is needed. We must take steps to develop a program which will help us to understand the causes involved and to prevent the premature delivery of this large proportion of births.

An important question that needs answering is: how many infant deaths are of babies born prematurely? For the 3 year period 1946–1948, of the 9,115 infant deaths in Tennessee, 3,449, or 37.8 per cent, were of babies said to have been born prematurely. From a study of the infant deaths reported in 1949 (using birth weight for those born in 1949 and months of gestation for those born in 1948) it was found that 45.3 per cent of the infant deaths were of premature babies (Table 2). The

TABLE 2

Number and Percentage of Infants Dying under One Year of Age Stated To Be Premature for the 3 Year Period 1946–1948 and for 1949, Resident Data, Tennessee*

	1946–1948	*1949*
Infant Deaths	9,115	3,335
Premature—Number	3,449	1,510
Per cent	37.8	45.3

* For 1946–1948 births of less than 9 months' gestation; for 1949 birth weight of 5½ lbs. and less for those born in 1949 or less than 9 months' gestation for those born in 1948.

percentage may be slightly higher for 1950 when birth weights are available for the entire group of infants. Since this percentage is so high, it is obvious that further reduction in infant mortality is going to depend in large part on the prevention of premature delivery and on saving the lives of those infants that, unavoidably, are born prematurely.

When we first asked our Statistical Service for exact data concerning the problem of prematurity in Tennessee we were shocked to learn that very few of these data were available. Using birth and death certificates, our Statistical Service was able to make tabulations for the study of the frequency of, and deaths attributed to, prematurity. It had not been our practice to match birth and death certificates and since facts regarding births and deaths had not been brought together our study was extremely limited. Mortality in relation to period of gestation, place of birth whether in hospital or in home, the age of the mother, weight of the baby, etc., remained a mystery as securely locked in the steel files of our vault as the grave in which the original of the statistic was buried. Something had to be done about this, and therefore, two studies were

undertaken. We began with the 1946 certificates. Infant birth and death certificates were matched, and the data regarding the mother and delivery were added to the punch card for the infant death and this total procedure was established as a routine for future practice. This analysis proved what had been expected, that infant death certificates were on record for babies who officially had never been born. Attention to this detail resulted in a marked improvement in reporting, and in 1949 we had only 32 death certificates on Tennessee "unborn" babies.

A second method of studying premature babies has been by careful observation and follow-up by the health department personnel of all babies born prematurely. From the birth certificates the health department obtains the facts regarding premature babies in the county or city. A premature roster is established. In a few areas procedures have been worked out for notification of a premature birth to health departments by hospitals. We assume that all babies born prematurely need special nursing supervision. For study purposes, the local health departments are asked to obtain and report to the State Health Department, after the first birthday, the status of these infants born prematurely. The health departments are thus able to evaluate their programs and find out what success they are having in reducing mortality of premature infants. The status of the infant at one year of age is added to the birth punch card for the premature birth. In this group, we have discovered that it is difficult to get all death certificates filed.

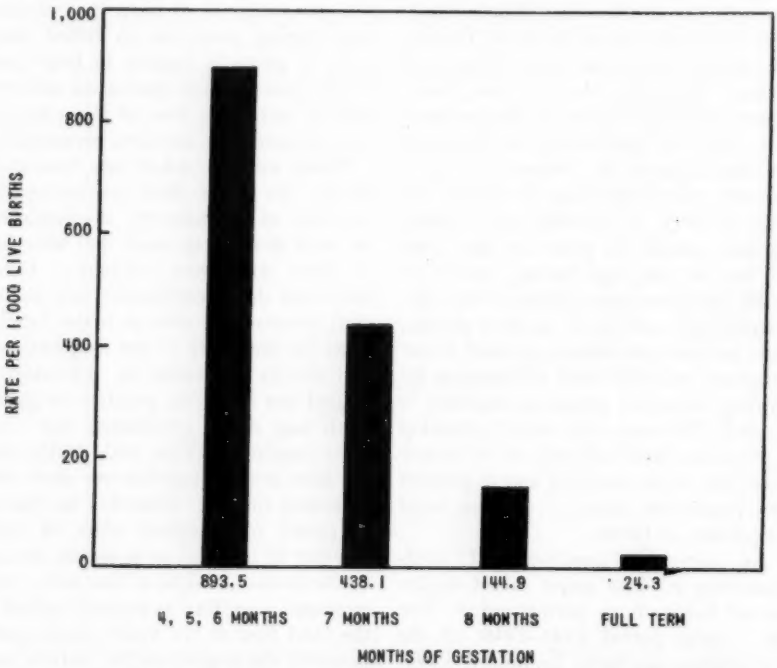


FIGURE 2—Infant Death Rate per 1,000 Live Births according to Months of Gestation, Resident Data, 1946–1948, Tennessee

TABLE 3

Number of Infant Deaths with Rates per 1,000 Live Births according to Months of Gestation, Resident Data, 1946–1948, Tennessee

Month of Gestation	Live Births	Infant Deaths	
		Number	Rate
Total	242,613	9,115	37.6
Total Premature	9,573	3,449	360.3
4, 5, and 6 months	1,493	1,334	893.5
7 months	3,221	1,411	438.1
8 months	4,859	704	144.9
Full Term	233,040	5,666	24.3

These are deaths for which an undertaker may not be employed. In 1946 and 1947, of the premature infants found to be dead, 145, or 6.7 per cent, did not have death certificates.*

Some of the statistical data from these studies will be presented. We recognize that for 1949 and for future years the results will not be comparable because of the change in the definition of prematurity. However, the uses of these prematurity statistics will be the same. In Table 3 and Figure 2, the infant death rate is given according to period of gestation for the 3 year period, 1946–1948. As is to be expected, nearly all of the premature babies of 4, 5, and 6 months' gestation, died (89.4 per cent). The mortality was less for those of 7 months' gestation (43.8 per cent) and 8 months' gestation (14.5 per cent). It is probable that we can save only a small proportion of babies born after such short periods of gestation. For prevention of these deaths, efforts must be directed toward the prevention of premature delivery. However, even for the premature babies of 8 months' gestation, mortality was approximately six times the mortality for full term babies. The prevention of deaths of these premature babies offers a great challenge to public health workers.

Sufficient time has not elapsed to permit a similar comparison of infant mortality for 1949 according to birth weight. However, neonatal mortality has been obtained, using the grouping in grams recommended by maternal and child hygiene directors.[5] Weights in pounds and ounces have been converted to grams and the birth weights of those with unknown weights have been estimated according to the distribution of births of known weight of the same period of gestation (Table 4 and Figure 3).

The neonatal mortality of these premature infants was 210.1 per 1,000 live births or 21.0 per cent (Table 4). This rate is lower than the neonatal death rate of premature babies obtained for 1946–1948, using months of gestation (330.2 per 1,000 live births or 33.0 per cent).

The neonatal mortality rate for prematures in 1949 in Tennessee of 21.0 per cent, however, is excessive judged by data from other areas.[6] For white births in New York City for 1948, the neonatal death rate was 15.2 per cent. Rates for upper New York State and Connecticut are not strictly comparable, for only premature births of less than 2,500 gm. were included and the inclusion of the babies weighing 2,500 gm. or 5½ lbs. appears to make considerable difference. However, these rates of 20.5 per cent for upper New York State and 18.4 per cent for Connecticut differ only slightly from ours. In the future, however, the same definitions will be used and we shall have standards by which to judge the progress, if any, that we are

* There is another small group of premature infants which is completely unknown to us—those without birth or death certificates.

TABLE 4

Number of Neonatal Deaths with Rates per 1,000 Live Births according to Weight, Resident Data, 1949, Tennessee*

Birth Weight in Grams	*Live Births*	*Neonatal Deaths*	
		Number	*Rate*
Total	82,307	2,112	25.7
Total Premature	6,255	1,314	210.1
1,000 gm. and under	367	314	855.6
1,001–1,500 gm.	599	347	579.3
1,501–2,000 gm.	1,174	351	299.0
2,001–2,500 gm.	4,115	302	73.4
Full Term	76,052	798	10.5

* It was necessary to estimate weights of 2,279 births and 153 neonatal deaths.

making. It is hoped that similar data will be available shortly for many states and can be combined to form statistics of prematurity for the United States. The working group on Natality Statistics of the Public Health Conference on Records and Statistics has made recommendations for definitions and procedures to be followed for obtaining such statistical data.

There was considerable variation in the neonatal death rates of premature infants according to birth weight as shown in Table 4 and Figure 3. Infants weighing 1,000 gm. or less at birth had a neonatal mortality of 855.6 per 1,000; that is, 85.6 per cent of these infants died within the first month after birth. As birth weight increased, the death rate decreased, but, even so, the

FIGURE 3—Neonatal Death Rate per 1,000 Live Births according to Birth Weight, Resident Data, 1949, Tennessee

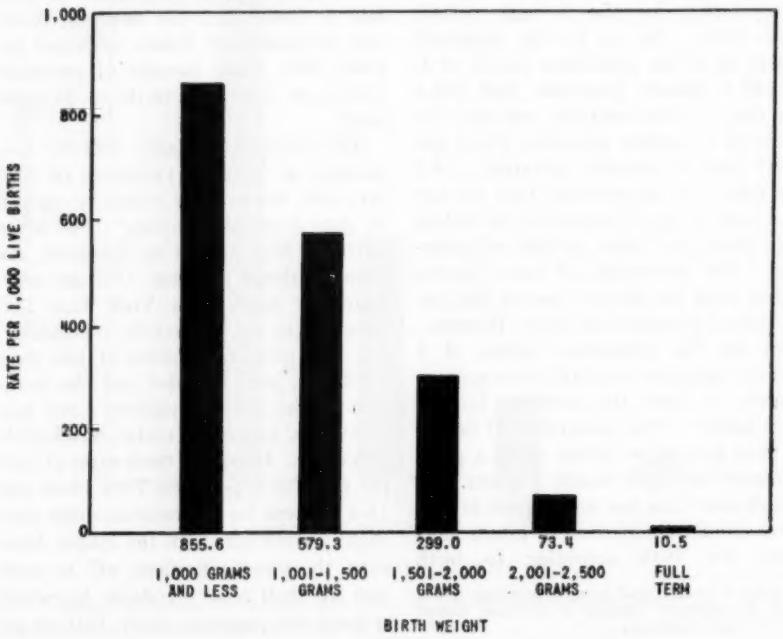


TABLE 5

Number of Deaths of Premature and Full Term Infants with Rates per 1,000 Live Births by Age at Death, 1946–1948, Resident Data, Tennessee

Gestation	Live Births	Infant Deaths—by Age at Death: Total Number	Total Rate	Under 1 Week Number	Under 1 Week Rate	1 Week–1 Month Number	1 Week–1 Month Rate	1 Month–5 Months Number	1 Month–5 Months Rate	6 Months–11 Months Number	6 Months–11 Months Rate
Total	242,613	9,115 *	37.6	5,109	21.1	1,112	4.6	2,083	8.6	808	3.3
Premature	9,573	3,449 *	360.3	2,842	296.9	319	33.3	246	25.7	42	4.4
Full Term	233,040	5,666 *	24.3	2,267	9.7	793	3.4	1,837	7.9	766	3.3

* Includes 3 with age unknown.

neonatal death rate of infants weighing 2,001–2,500 gm. at birth was 73.4 per 1,000. For full term infants, the neonatal death rate was only 10.5 per 1,000, or approximately one-seventh that of infants weighing 2,001–2,500 gm. at birth.

Data that have been most revealing to us and have practical value in our program pertain to the age at death (Table 5). This material is for the 3 year period, 1946–1948.

As is well known, a high proportion of premature babies die shortly after birth—in fact, 82.4 per cent of the premature babies who died during the 3 year period, 1946–1948, died under 1 week of age. However, the death rate for those 1 week to 1 month of age was also much higher than that for full term babies (33.3 per 1,000 for premature and 3.4 per 1,000 for full term babies). The data for the older infants deserve attention by public health workers. For infants 1 month–5 months of age the rate was over three times as high for these premature babies as for full term babies. By this age many of these premature infants have been sent home from the hospitals. During this age period the public health nurse can be of much help to the mothers and babies, and the final mortality rate of this age group is for the most part directly proportionate to the ability of the nurse to do the job for which she was employed. For the period 6 months to 1 year of age the number of deaths is small and it is not definitely known how long the premature babies continue to have a higher death rate than have the full term babies. Because of the practical public health value of this material we feel that it is essential to study mortality for the entire infant period.

By obtaining the status of premature infants at one year of age, we were able to study infant mortality according to place of birth. For premature births in 1946–1947, 32.4 per cent of those born in hospitals died, while 48.2 per cent of those born at home died. Infant mortality according to hospital where delivery occurred was found to vary widely; for example, for one hospital, with white births only, the infant death rate of prematures was 18.4 per cent. For another hospital the infant mortality of colored premature babies was 56.1 per cent. Although mortality after the infant has been sent home from the hospital cannot be attributed to the hospital, over 80 per cent of the deaths of these prematures occur within 1 week after birth—that is, in the hospital. Also, in planning our program it is important to plan that premature babies returned to the homes continue to have the necessary good nursing care.

DISCUSSION

Some of the facts that we are obtaining regarding our problem of prematurity in Tennessee have been presented. They indicate the possibilities available from the analysis and use of prematurity

statistics. A series of tables and charts taken from these studies of prematurity in Tennessee was used at institutes attended by public health personnel. Our data have served to show the nature and size of the problem. As a result of these studies, our county personnel are evaluating their own prematurity programs. It is known that the use of such prematurity statistics has practical value in Tennessee as well as in other areas. Great progress is being made at the present time in the development and use of prematurity statistics.

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Course on Virus Research

The Department of Microbiology of New York University College of Medicine will give an intensive ten week course in the theories and techniques of virus research, March to June, 1951. The course, occupying the full time of the student, will include lectures, discussion, and laboratory work; the latter including the techniques currently used with bacterial and mammalian viruses such as, methods of cultivation, purification, concentration, and assay of viruses, their serological reactions, and the hemagglutination. Credit for two full courses or 24 points will be given by the Graduate School of New York University. Because the number of students is limited to 12, early application is recommended.

Further information from the Department of Microbiology, 477 First Avenue, New York 16, N. Y.

Current Practices and Trends in the Child Health Conference*

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THE Committee on Child Health of the American Public Health Association has undertaken the ambitious task of developing or encouraging the development of statements on recommended practices and guides for the organization and operation of public health programs for children. The first specific task that the committee has tackled is the child health conference. The staff of the committee reviewed the literature on the subject over the past twenty years, analyzed manuals on the child health conference from health departments of 23 states and 8 cities, and reviewed 37 manuals on public health nursing in the files of the National Organization for Public Health Nursing. The material studied has been summarized in a compendium of current practices in this country. With this as a point of reference, the members of the Committee on Child Health are at present in the process of developing a statement on recommended practices. The committee has representation from the fields of pediatrics, dentistry, nursing, health education, and social work, and has had the assistance of persons from the American Academy of Pediatrics, United States Children's Bureau, The Midcentury White House Conference on Children and Youth, the Maternal and Child Health and Crippled Children's Directors' Association, and the Maternal and Child Health Section of the American Public Health Association.

Since the statement on the child health conference is still in process of development it is impossible at this time to present more than a preliminary report on the current practices in the country, with an indication of the trends or directions of change that seem to be occurring. It must be confessed that presuming to decide when a practice can be called a trend or to predict that a certain current activity will some day become general practice is to a large degree subjective. The material in this paper is not presented, therefore as the accepted decisions of the Committee on Child Health, but rather as some expressions of members of the committee, plus personal opinions and perhaps some wishful thinking and crystal gazing.

The subject is a broad one: the final statement will be a large document. In the space permitted here, one can only touch upon highlights or points of special interest. The child health conference is one of the oldest public health programs for children, going back just about 50 years. The practice is undoubtedly spreading, but any cheerful impression that it is comprehensive or nearly universal is quickly sobered by reading the report of the American Academy of Pediatrics Study of Child

* Presented at a Joint Session of the American School Health Association, The Committee on Child Health, and the Food and Nutrition, Maternal and Child Health, and Public Health Nursing Sections of the American Public Health Association at the Seventy-eighth Annual Meeting in St. Louis, Mo., November 3, 1950.

Health Services. Only 6 out of 1,000 children in the United States under 5 years of age attended a Child Health Conference during the year of the study.

Agencies are increasingly giving special attention to an architectural layout of the child health conference which lends itself to effective work, particularly with the rooms designed in such arrangement as to make for smooth and less confusing traffic of patients through the conference. The exact layout depends somewhat on the size of the case load, the number of professional persons working, the type of program, and the community. One important item which is stressed in the specially designed conference is privacy for the mother to talk with the physician and nurse. Other features that are sometimes added are a play area for the preschool age children, carriage areas, an instruction, lecture or demonstration room and rooms where group discussions can be held. More often, conferences are housed in whatever facilities can be found.

The age group covered by child health conferences is usually from birth to school age. Coverage of the first year of life is always attempted first and the later preschool years are added as facilities, funds, and personnel permit. In very few child health conferences is the service limited any more to infants. The trend is in the direction of taking positive steps to keep the preschool age children under health supervision.

In the past, parents discontinued attending the conference when the child reached one year because all the immunizations were by that time completed and special feeding instructions no longer seemed necessary or were given. The same two factors of immunization and feeding are now instrumental in the change toward more likely return of the preschool age child to the conference. In respect to immunization, booster doses are being given between the first year and school attendance, and the emphasis upon the psychological aspects of feeding is of interest to the parent beyond infancy.

The obvious place to look for new candidates to attend the child health conference is among new-born infants. Various techniques are being used in different parts of the country whereby new-born infants are contacted for referral to the child health conference. A common practice is for the visiting nurse in each district to be notified about new births by the health department or other office to which birth certificates are sent. The nurse makes an effort to visit the home shortly after the mother and the infant return from the hospital or if the child has been delivered at home as soon after the birth as possible. In rural areas the community nurse usually knows about the birth without the necessity of receiving notification through the official agency.

One obvious disadvantage of the birth reporting method is the delay which ensues. In states where birth certificates do not have to be submitted for some weeks after the birth of the child, the nurse may not get into the home during the important early neonatal period. Another method that is used is for the child health conference to make an arrangement with the members of the local medical society or with the hospital maternity services or both whereby certain agreed upon categories of new births are reported to the visiting nurse.

While it is believed that health supervision should be available for all children, a child health conference in a community may not be able to handle the total case load and may therefore feel it advisable to give time or attention to those who need it most. This may mean selective intake, such as giving special consideration to infants who had been premature, the first born, infants born on ward services or infants with report of congenital abnormality or birth injury.

The traditional functions of the child health conference of giving immunizations and feeding instructions still remain. Immunizations against diphtheria and smallpox are routine in all areas. Many areas have also added pertussis immunization and there is a strong trend to the addition of tetanus as well, particularly with the use of combined materials. The universal addition of tetanus whenever diphtheria toxoid is given would be a significant contribution to preventive child health work.

Exact schedules of immunization vary from place to place. There is a trend toward earlier immunization against whooping cough and smallpox and for the routine use of booster doses against all the diseases except smallpox at about 3 years of age and against all, including smallpox, upon entering school.

The practice formerly customary of holding separate special immunization sessions has almost disappeared. Since immunizations are now usually given at the time of a regular health supervision visit, better opportunity exists for health education concerning immunization. Conferences are utilizing such simple but salutary measures as having the needles and other immunization material kept out of sight, keeping the door closed during the immunization procedure so that other children in the waiting room are not disturbed, and giving the child truthful warning in advance of the injection.

In feeding instructions, the trend in the child health conferences, in keeping with the times, is away from rigid scheduling and prescribed quantities of solid food and more upon the psychological aspects of the feeding situation. Feeding probably still rates number one in frequency among child rearing problems but seems to be lessening as a somewhat more permissive atmosphere is being created around the feeding situation. Sleeping problems are probably running a closer second to eating difficulties than was formerly found to be the case.

As already referred to in connection with both immunization and feeding, the mental health or psychological aspects of child rearing are taking on increasing importance in the work of the child health conference, as in general pediatric thinking and practice today. The primary objective expressed by the majority of child health conferences is to help parents to rear children so that the children will be healthy and the family setting will be a wholesome one. Discussion on feeding, sleeping, habits, discipline, and behavior takes a prominent place in the work of the child health conference.

At the same time, distinction is quite clear between these activities and those of a psychiatric service such as a child guidance clinic. The staff of the child health conference are not expected to be psychiatrists. Their work is focused at the normal range of parental difficulties. Mothers who visit the child health conference can be roughly divided into three groups. First are those who merely need information on child rearing and second those who have already encountered a difficulty, but one which lends itself to rather easy analysis and solution. Third are the mothers whose relationships with their children are so disturbed as to warrant more specialized attention.

For the last, the child health conference staff must learn the occasion for, and method of, effective referral. The more simple problems of the second group are now being handled in many child health conferences. It is the first group, however, those who have not yet experienced difficulty, to whom child health conferences are trying to give greatest attention. The terms "anticipatory guidance" or "anticipatory counseling" are being used to describe the practice of forewarning mothers of the critical points in child rearing at which troubles commonly begin. When

a mother happily reports that her ten-month infant eats a large bowl of cereal, she is told that when the baby will be about 15 months old, he may actually eat less food than now. He will be bigger, but he will be growing less rapidly and need less food. So many feeding difficulties begin because of mothers' concern at the unexpected drop in intake. Here is the best kind of preventive mental hygiene at a simple physiological level.

The type of service here described under the term child health conference is the one which gives traditional emphasis to prevention and does not have treatment as a part of the service. The exception to this is in certain very minor illnesses such as a mild diarrhea, respiratory infection or skin eruption. Simple laboratory tests for hemoglobin and urinalysis are also occasionally done. The criteria for determining whether treatment should be instituted in the child health conference are very much the same in different places. They are primarily the degree to which the illness of the child can be adequately supervised by the child health conference. This depends upon the frequency with which the child health conference is held, the accessibility of the public health nurse at other hours than those in which the child health conference is actually operating, and the availability to the patient of other resources in the community for care of the type of condition from which the child is suffering. Whatever the practice, careful instruction must be given for the possibility that the condition may worsen beyond the level at which the child health conference should continue to retain responsibility. In urban areas, a minimum frequency of one session a week has been recommended, in rural areas not less often than once a month.

The desirability of bringing together the supervision of the well child and the care of illness is being met only in certain ways. The child health conferences are not usually adding treatment to their program, but pediatric clinics are adding health supervision to theirs. This is understandable. The theoretical indication for adding treatment to the content of a child health conference would be found in an area which is devoid of adequate treatment services, as in remote or rural districts. In such districts, the child health conference would probably hold infrequent sessions, would not be in the district enough of the time to assume sufficient responsibility for the care of illness and therefore could not compensate for the inadequacy of treatment resources in the community. On the other hand, pediatric clinics which have heretofore usually limited themselves to the care and treatment of illness or health deviations can very easily add health supervision of well children to their program. When this is done, continuity can be attained by having the same personnel work in both services even though the health supervision may be given on a different date or time from care in the regular pediatric clinic.

At least five different kinds of visits are offered in child health conferences. First is the physical examination visit at which, as the name implies, the doctor makes a complete examination. This is usually about once every three months in the first year of life and less frequently thereafter.

Second is the inspection medical visit in between the physical examinations. These are being held less frequently than formerly, in most places no longer following the traditional monthly interval. The third type of visit is one merely for completion of an immunization series.

Then, there is the nursing home visit. Except for the general routine of visiting early in the life of the infant, home visits by the nurse are made on a selective basis.

In addition to the medical visits, some child health conferences have the nurse

hold conferences on a day when the physician is not present. This too is made on a selective basis on the recommendation of the physician, at the discretion of the nurse or at the request of the mother. Like the home visit, the nurse's conference is held when there seems to be special need for giving the mother support over and beyond her visit to the physician. A desirable practice, but one which is rarely seen as yet, is to have the mother come to the nursing conference without the child so that she will be freer to discuss her problems with the nurse.

Testing of sight and hearing are seldom a part of the work of the child health conference. This is obviously due to the difficulty of doing testing in the young child but it is unfortunate since preventive steps can be taken if visual or hearing defects are discovered early. Vision testing in the 4 year old and up is rather reliable if done carefully with the E Chart method. Doing the vision test at the last examination just before entrance to school is of little value since the test will shortly be done in school anyway.

Hearing testing is more difficult in the preschool years. The pure tone audiometer which is considered by experts to be the most effective technique for the school age child is not as successful for the preschool child and newer methods of using the spoken voice in controlled recordings are being developed. Objective hearing tests, such as by galvanic current analysis, are still in the experimental stage.

A number of child health conferences have added dental service, sometimes at the time of the regular visit but more often at a separate session. In some instances the children are examined by dentists. More often dental hygienists are used. It is rather generally recognized that dental examination, in contra-distinction to dental treatment, is not worth while in the school age child since close to 100 per cent of the children have some need for treatment and screening or survey examination to find those who need treatment is pointless. In the preschool child, the screening for purposes of special referral may have slightly more meaning since those who have outstanding early evidence of dental or oral disease are the ones for whom special referral and special efforts to obtain correction should be made. Furthermore, since the 6 year old child is most vulnerable to dental disease, education of the parents and the children during the several years preceding admission to school would be valuable. A small number of child health conferences have instituted fluorine prophylaxis.

The basic staff of the child health conference is the physician and the nurse. In some urban areas, only physicians with special pediatric training are chosen for work in the child health conference. By and large, this is obviously not possible, but one would question the advisability of restricting the work to pediatricians even if they were available. Physicians working in the child health conference have real opportunity to learn about children and, as indicated in the study of the Academy of Pediatrics, the bulk of health supervision of children is carried on by general practitioners, many of whom have had inadequate or no training in child health. The child health conference can be a means to raise the caliber of pediatric work done by general practitioners. Pediatricians when available are often reserved for supervision, guidance and consultation to the general practitioners in the child health conferences.

Since the community public health nurse is usually also the one who works in the child health conference, the qualifications of nurses in the child health conferences are usually the same as those for public health nurses in health departments. The question of special-

ized versus generalized nursing arises chiefly in urban centers where a child health conference may be held every day, thus occupying so much of the time of the nurse that not enough remains for community nursing work. This can be obviated to a degree by having the charge nurse devote full time to the child health conference and have each of the other nurses spend only part time in the conference. Such a plan would depend upon an appointment system that aims at having the mother see the same nurse at each visit. In rural areas where the child health conference is held less frequently there is little question but that the community nurse should also be the child health conference nurse.

Additional personnel on the sub-professional level are utilized in the conferences. The duties of such persons are a combination of clerical, reception, and technical work, depending upon the program of the specific conference. Many areas employ volunteers with greater or lesser satisfaction. In keeping with the current effort on the part of the nursing profession to define or separate out the professional from the sub-professional activities carried by nurses, more and more of the activities formerly carried by the nurses are being transferred to other persons. In New York City, the position of public health assistant has been created. Such a person is less expert in stenography or typing than a qualified stenographer or typist, but is better oriented in public relations and health services. She sometimes arranges appointments and may weigh babies and learn to do laboratory tests as well as be a receptionist and help to direct the traffic within the child health conference.

An analysis of specific tasks performed by the different professional persons on the staff of the child health conference is not possible without considering the number of each. The decision on the number of physicians working at one time in the child health conference is largely determined by the number of nurses available. It is the general practice to have a single physician. More than one physician may work in a single session, especially in larger urban centers but it becomes cumbersome if more than two physicians work at the same time. In rural areas more than one nurse is not often available to a community. Certain areas have the practice of nurses in adjacent health districts helping each other on conference days, so that they work together in the conferences in each other's districts although each does her own follow-up home visiting. In large crowded conferences in urban centers where two physicians work at a time it is common and desirable to have three nurses working with the two physicians.

On the question of how and where in the conference the nurse works, there are two general practices. In one, the nurse is in the room with the physician so that she can hear the recommendations that are made, listen to and possibly participate in the discussion and not duplicate or conflict with it in her own advice to the mother. The other school of thought states that if the nurse is in the room with the physician during the interview he holds with the mother, there is no time for her to give separate counseling to the mother. In conferences where this is attempted it is found necessary for all the patients to be at the conference for the nursing interview well in advance of the arrival of the physician or to remain after his departure. In the other method, in which the nurse holds her interviews with mothers concurrently with the doctor, any given mother sees one after the other in sequence. In certain instances the mother sees the nurse first, in others she sees the physician first and sometimes the physician is seen between two interviews with the nurse. Compromise between the two general methods is possible only when an adequate number of

nurses are present, that is, two nurses for one physician or at least three nurses for two physicians. In that system, a nurse is in the room with the physician during his interview with the mother and then leaves the room with the mother to continue a separate interview while the next nurse enters the physician's room with the next mother. If the nurse is not in the room with the physician there must be adequate opportunity for exchange of experiences by means of written notes as well as by personal discussion and conference during or after the session.

Additional professional personnel besides physicians and nurses are sometimes employed or utilized in the child health conferences. The most common is the nutritionist. In some places she gives direct service to families in connection with budgeting and meal planning or special diets which may be necessary. Obviously, it is extremely unlikely that the nutritionist can give service on a direct basis as a routine for all patients and at all visits. If she does give such type of direct service by the individual interview method, the cases are carefully selected by special referral. More often, the nutritionist gives group instruction classes, lectures or food demonstrations. These may be on a formal basis at the conference, they may be held at special times other than the conference or they may be held on an informal basis in the middle of the conference session.

The trend at the present time seems to be to use nutritionists like other specialists as consultants to the regular staff rather than for direct service to the clients, either individually or in groups. Nutritionists, social workers, orthopedists, pediatricians, opthalmologists, cardiologists, psychiatrists, and at times psychologists, are variously used in this way. The function of such specialists in giving consultation is not focused primarily upon helping the staff with specific cases. Adequate special consultation for this purpose is rarely if ever available. Instead, the consultant aims by means of selected cases to train the staff. The objective of staff training is twofold. One is to teach the physicians and nurses in the child health conferences the diagnosis and management of the "normal" range of conditions found in children. For example, the ophthalmologist discusses seeming incoördination of the eyes in the young child. The second objective of the specialist participating in staff training is to instruct the staff on recognition of abnormality and better and more effective referral for care when abnormality exists.

With increasing emphasis on the mental health aspects of child rearing, the traditional instructional type of interview between the mother and the doctor or the mother and the nurse becomes less appropriate. The two-way discussion in which the professional person does at least as much listening as talking is now beginning to appear. Since the interview has not been a prominent part of the professional training of the physician or nurse, new techniques in the medical and nursing interview must be developed. For example, the traditional rigid sequence of history taking, physical examination, immunization or other procedure must be modified and fitted into the total interview situation.

The manuals of state and city health departments seem to indicate that the number of patients carried by a physician should be such as to permit from five to twenty minutes per patient. The majority of conferences suggest five to ten minutes per patient but the actual practice too often is to have the conference overloaded so that even this amount of time may not be available. Although it is true that it requires more time for the physician and the nurse to listen than merely to give instruction and it would seem to require more time

to discuss the psychological aspects rather than the obviously physical ones, a recent study of the actual observation of the work of physicians in child health conferences showed that those physicians who gave more consideration to the psychological aspects actually consumed less total time per patient than the physicians who did not. If the staff is well trained and well qualified it may not require more time. When they feel inadequate and yet impelled to open discussion on the non-physical problems time is consumed to little advantage.

For a good many years, sporadic efforts have been made to supplement the individual interview with group teaching. Studies are now under way on the most effective composition of groups of mothers and the methods of introducing group techniques into the child health conference. The scope of the group work is intended to be no broader than the usual content of the conference and the group sessions are to be carried by the regular conference staff.

Repeated references have been made to staff training and development, a subject which is receiving considerable attention throughout the country. Space does not permit extended discussion of preservice and inservice training programs, use of supervisors and consultants, case conference seminars and scales that are being used for evaluating the quality of professional work.

Significant developments in keeping records in the child health conference include printing on the record form key items in psycho-social and physical maturation and critical points for anticipatory guidance. Some child health conferences are attempting to attain continuity of records between the obstetrical report on the one hand and the school health record on the other. Attempts are made to obtain a transcript of the obstetrical history from the hospital of delivery. It is particularly in those areas where coöperation has been obtained with the maternity services of the hospital and with the local medical groups that more effective transmission of summaries of obstetrical history is obtained together with the referral for the first home visit of the nurse.

On the other hand, the responsibility rests with the child health conference to pass along the record of the child at the time of entrance into school. In some places special effort is made by the child health conference to perform a final examination which constitutes the preadmission examination to school and which may be recorded directly on the school health record form.

There have been no significant changes in practice in respect to printed literature. There is general recognition that the mere distribution of printed literature has little meaning unless it is done selectively in relation to the specific needs of the mother at the time and also unless the staff is fully acquainted with the contents of the printed material. The device is often used of having the nurse, who is the one who usually distributes the material, mark pages and paragraphs for special study by the family at home in connection with a question or problem. In order to have the staff more interested in the contents of the literature that they distribute, some health departments encourage staff participation in the development of the material, by circulating the material in provisional draft and obtaining comments from the staff concerning the contents and their effectiveness. Careful use of posters and reading materials placed in waiting rooms is not common.

In recent years, there has been considerable expansion of the nursery school movement, particularly in urban parts of the country. Where the younger children are accepted into the public school system they may receive health supervision from the school health service. In the separate nursery school, apart from the regular public school, attempts

are being made in certain communities to tie together the child health conference and the nursery school group by such devices, among others, as special appointments in groups. In respect to the children of this age group, the nursery educator like the pediatrician and the public health nurse is concerned with the problems of physical, mental, and social maturation and with the relationship of the child's physiology to his behavior. The two professional groups can effectively complement each other by a pooling of their respective skills.

It would seem fitting to close with a word or two on the interesting question of the relationship between the child health conference and the private physician, now and in the future. It is impossible to predict an ultimate pattern for giving health supervision and care of illness for children. But it is quite clear that no immediate substitute for the child health conference exists in many parts of the country and that for the present such services need expansion and strengthening. It is also apparent that immediate consideration can be given to making available to the private physician the public health nursing, group instruction of mothers, printed literature and other advantageous features of the child health conference.

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Inservice Training in Radiological Health

The School of Public Health, University of Michigan, announces an Inservice Training Course in Radiological Health, to be held at Ann Arbor, February 5–8, 1951. Assistance in the preparation of the program has been obtained from the Atomic Energy Commission, the Michigan Office of Civil Defense, and the U. S. Public Health Service. The program has been organized primarily for health department employees and will stress basic principles and fundamentals. Civil defense will not be a major topic. Registration is $5. For further information write H. E. Miller at the School of Public Health.

Physician Participation in School Health Services*

A Report on the Analysis of a Questionnaire to Medical Societies on Physicians and Schools

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THIS is a report on one part of a survey of school health services in the United States. It presents an analysis of a questionnaire covering the participation of physicians in the school health program. The questionnaire was distributed by the Bureau of Health Education of the American Medical Association to the secretary of each of the organized medical societies in the 48 states, the District of Columbia, and the territories. The survey is being made in coöperation with the Office of Education of the Federal Security Agency which is now studying other aspects of school health services as a part of the total investigation.

If school health services are to be brought to their culmination, the private practitioner or family physician must of necessity participate in the program. While his place in all phases of school health services is important, it is in the follow-up, correction, and adjustment of health needs that his role becomes most vital.

Numerous instances of excellent cooperation between family physicians and health and education departments have been reported to the American Medical Association from various places. Over a period of years, good relationships have been extended by the work of the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association, which has been functioning continuously since 1911. In recent years an attempt has been made to define more closely the kind of relationships that should exist between physicians and schools through the National Conferences on Physicians and Schools held in 1947 and 1949.

The extent of physician participation in the school health program on a nationwide basis, however, has not been specifically known. It was therefore decided to study this problem through a questionnaire on physicians and schools directed to all local medical societies.

The purposes of the survey were (1) to determine the extent of participation of private physicians in school health programs; and (2) to suggest methods of physician participation that might be instituted in local areas where such practices do not already exist. It should be emphasized that this study was concerned only with the presence or absence of certain health service activities in a given area, and in no case attempted to

* Presented before the American School Health Association, and the Maternal and Child Health and School Health Sections of the American Public Health Association at the Seventy-eighth Annual Meeting in St. Louis, Mo., November 2, 1950.

evaluate the quality of the services.

PROCEDURE

Questions were developed covering various school health services which embodied widely accepted principles such as those found in *Suggested School Health Policies.*[1] *Reports of the 1947 and 1949 Conferences on Physicians and Schools,*[2] *Health Appraisal of School Children,*[3] and *Health in Schools.*[4] One question on health instruction was also included, on recommendation of several leaders in the field who stressed the importance of the physician's role in suggesting pertinent health topics and in evaluating the scientific accuracy of health materials.

Many of the queries made were frankly leading questions, deliberately adopted with the belief that questions pointing up recommended principles would implement the second stated purpose. The impact of this procedure on the nature of responses may be considerable. On the other hand, weighing comparative values suggests that the merits of a positive approach are likely to overbalance any inaccuracies that may have resulted.

As far as possible, the questions were constructed to require "yes" or "no" answers. Others were set up so that the respondent circled the answer most nearly corresponding to his situation; for example, the varying percentages of children immunized before school entrance. In a few instances, such as the average number of minutes per pupil spent on periodic medical examinations, a direct answer was requested.

The Bureau of Medical Economic Research of the American Medical Association advised on the design of the study, provided technical assistance in developing the questionnaire, and conducted the machine tabulation of results.

Previous to final distribution of the questionnaire, a trial run was made with a limited number of medical societies to test the effectiveness of the instrument. At the same time, the questionnaire was sent to outstanding medical and educational leaders in the school health field, with a request for comment and criticism. As a result of the trial run, and the suggestions received, appropriate modifications were introduced. The questionnaire was then submitted to the Office of Education for approval. Before printing, several additional adjustments were made, taking into account the recommendations of the staff of the Office of Education.

FINDINGS

Of the 1,897 questionnaires on Physicians and Schools mailed to medical societies a total of 1,051, or 55.4 per cent, were returned. Of these, 48 were incomplete or received too late to include in the summaries. The remaining 1,003 questionnaires are considered in this report, about 52.9 per cent of the possible return. Medical society officers submitted 75 per cent of these, while the remaining 25 per cent came from school or health departments to which the local medical societies had referred the questionnaire. Sixty per cent of the returns covered schools in the one or more counties conforming to the areas from which the local medical society membership was drawn. Except for a very few, describing a single school, the remaining 40 per cent involved the schools in a major city or a city-county school system corresponding with local medical society coverage.

GENERAL INTERPRETATION OF THE RESPONSE

A number of qualified answers were given to the "yes" and "no" questions indicating that certain practices were not universal in a given community. For purposes of this report any favorable response, even though modified or qualified, has been treated as a "yes" answer.

Questions requiring a quantitative answer (for example, those in which the respondent circled a percentage) presented some interpretive difficulty. A blank or "no" answer has in these cases been tabulated as a complete absence of the practice, although in many instances it may indicate inability of the respondent to arrive at a considered point of view on percentage. Questions requiring a direct answer have been coded and tabulated categorically after preliminary study of the frequency of responses.

In appraising the general nature of the response, it should be kept in mind that the returns may be largely representative of those medical societies most interested and active in school health work. Conversely, the societies that failed to return the questionnaire may be those where health service relationships between the medical profession and the schools on a formal basis are least developed. On the other hand, the great bulk of physicians have school age patients. Health services, therefore, are often rendered to children as part of the physician-family relationship without recognition of the connection these services may have with the school program.

It is interesting to note that returns from the more densely populated regions of the country averaged 62 per cent, while the less densely populated regions returned 42 per cent of the questionnaires sent to them. The percentage of returns from the nine census divisions (regions) of the United States ranged from 38 to 69 per cent. Since the total response was relatively high and represents a good cross-section of medical societies in the various sections of the country, it may be regarded as a fairly descriptive sample.

PHYSICIAN PARTICIPATION IN SCHOOL HEALTH POLICY FORMULATION

A School Health Committee, with that title, was reported by 18 per cent of local medical societies. In the absence of a committee by that name, 16 per cent of the medical societies have assigned school health functions to their public health, legislative, or child health committees, or to local hospital staffs. A little over a third (34 per cent) of the medical societies are, therefore, directly concerned with school health service within their professional organizations.

School health councils, having membership outside of the school, were reported in 27 per cent of the communities; with medical society membership on such councils in 24 per cent. This means that in nine places out of ten, where such councils exist, the local medical society is officially represented.

Since the organization of the health and fitness division of the Bureau of Health Education in 1946, the establishment of school health committees in state and local medical societies has been encouraged. Findings demonstrate considerable progress and suggest not only a willingness of medical societies to concern themselves with school health problems but a recognition by educators of the need for consultation with physicians in planning the health service aspects of the school health program.

MEDICAL ADVISORY SERVICE

It has been widely recommended that schools have the services of a physician, on a full- or part-time basis, according to need.

About half of the areas reported some school medical advisory service in their rural grade schools and more than half have such service in their city grade and high schools. The comparatively small number of full-time school physicians, 4.6 per cent in rural schools, and up to 6.6 per cent in city elementary and high schools, is a reflection of the limited number of physicians trained in school health and seeking school positions as career jobs.

MEDICAL EXAMINATION AND TESTING OF CHILDREN

Periodic medical examinations of school children have been accepted as an important aspect of school health services for many years. A physician can perform a good screening examination and counsel with the child and his parents at the rate of four to five per hour, providing a nurse or teacher has completed certain screening tests earlier. This suggests an average of 12 to 15 minutes per child, although the time spent on individual children may vary greatly. Considerable deviation in the time devoted to examinations was reported. In 460 responses on the examination time in physicians' offices the median was 15.6 minutes while the quartiles fell at 10.7 and 20.6 minutes. In the 601 instances in which time spent on medical examinations in the school was specified the median time was 10.4 minutes and the quartiles fell at 5.5 and 15.3 minutes. The differential of approximately 5 minutes may be due to a saving of physicians' time in the school situation by teacher, nurse, or other school health personnel, or it may indicate a more adequate examination in the office where the physician is accustomed to work.

The data on where examinations are performed are inconclusive, though the pattern tends slightly toward conducting examinations in the school. There is little difference between the proportion of examinations performed by private physicians and school physicians. Many of the schools made use of neither a school nor a private physician for medical examinations.

Routine chest x-rays by any accepted method, and tuberculin tests with x-ray examination of positive reactors were also investigated. Routine x-ray examinations were reported on 43 per cent of the returns, and the grades tested in 39 per cent. One or more of the junior and senior high school grades (7 to 12) are routinely x-rayed according to 28 per cent, and all grades by 7 per cent; 4 per cent x-ray variable distributions of grades throughout all twelve years of school.

Routine tuberculin tests were reported in 41 per cent of the returns, and the grades tested in 35 per cent. All grades are tested in 7 per cent of the cases. Only junior or senior high school grades (7 to 12) are tested in 11 per cent. The remaining 17 per cent routinely tuberculin test a variable distribution of grades throughout the twelve years of school. Follow-up of positive tuberculin test reactors with x-ray examinations was reported in 48 per cent of the communities. Since 43 per cent state that routine x-ray examinations are used and these are usually in lieu of tuberculin tests, it may be assumed that most of those using tuberculin tests for screening follow up positive reactors with x-ray examinations.

ASSURING NEEDED MEDICAL CARE

Obtaining needed medical care for children of families unable to pay for services is a problem in some schools. The welfare or relief department of the county or municipality usually pays for those receiving public assistance, or cares for them in public clinics or hospitals. In the 1,003 replies, 818 (82 per cent) state that the community has some method of assuring needed medical care to children. Established methods of arranging treatment for eligible children other than through public funds was reported by 56 per cent of those answering. In 10 per cent, services contributed without charge by private physicians were a means of giving such children necessary help. Nearly every known national or local agency providing individual health services was listed as contributing in some degree to the care of needy school children.

SCREENING AND REFERRAL PROCEDURES

In the modern school health program

the teacher is expected to detect changes in the child's appearance or behavior that suggest illness or improper growth and development. Channels should exist for prompt referral of such children for medical care, as well as channels through which physicians may advise teachers on special needs of individual children.

For the country as a whole, 77 per cent of the communities reported that teachers carry out rough screening procedures, and that 56 per cent have some training in observation and screening techniques. Medical societies participated in planning and carrying out the screening program in 23 per cent of the communities. An established method for the teacher to refer children to a physician through the family was reported by 80 per cent. The reverse of this, a procedure in which the family physician informs the school of a child's special health needs and makes suggestions for necessary modifications in the school program of such children was noted in 64 per cent of the replies.

MEDICAL GUIDANCE IN PHYSICAL EDUCATION INCLUDING ATHLETICS

Physical education is a significant part of the modern school program. Since children vary in their capacities for physical activity, graded activity is necessary for the protection of the health of some children. Regular class activities for the physically sound were reported by 86 per cent of those responding. Modified class activities for other children were available in 67 per cent. In 27 per cent of the communities, individual corrective exercise was provided on medical prescription. Family physicians recommend assignment of children to different types of physical education when the need is indicated in 75 per cent of the communities.

In the high school interscholastic athletic program there is a high degree of medical guidance, possibly stimulated by regulations of State Athletic Association insurance and benefit plans covering injury to players. Such plans were reported in 70 per cent of the replies. Medical examination of athletes is done in some form in 91 per cent of the communities reported, and a physician is present at contests in which the injury hazard is great in 72 per cent of the communities. Eighty-five per cent require a physician's permit before a player with serious injury or illness may return to participation.

Intramural sports, open to all students who do not participate in interscholastic sports, were specified as available in 80 per cent, with medical permits for intramural participation required in 40 per cent of the communities.

The response to this question leads to the conclusion that medical guidance in interscholastic athletics has reached a higher level of development than other aspects of school health services. It is hoped that all students will some day enjoy the advantages of a school health service comparable to that provided for those engaged in athletics.

EMERGENCY CARE

For years, the desirability of a planned program of emergency care to cope with injuries and sudden illness in the school has been discussed by both educators and health personnel. Eighty-three per cent reported well stocked first aid kits, strategically placed in the school. Seventy-five per cent stated that one or more teachers in each school had some training in first aid. The names of parents' choices of physician for pupils were on file in 35 per cent of the schools, and posted steps to guide school personnel in emergency care—so-called standing orders—were reported by 37 per cent.

Replies to this group of questions would suggest that more complete arrangements for emergency care need to be made in many places. Since sudden illness and accident are bound to occur

in even the best organized school, it is important that more attention be given to this phase of health services.

COMMUNICABLE DISEASE CONTROL

Traditionally, communicable disease control has been the most emphasized school health service function. Exclusion and readmission procedures satisfactory to the school, to the health department, and to practising physicians are recorded in 87 per cent of the reports.

The modern concept is that immunization should be performed in infancy, and when done during school ages should be in the form of booster doses for strengthening existing protection. Immunization for smallpox prior to school entrance was reported for 72 per cent of the communities. Sixty-one per cent recorded diphtheria immunization prior to school entrance. Immunization for other conditions included whooping cough, 16 per cent; tetanus, 8 per cent; typhoid fever, 7 per cent; and others 1 per cent. Local policies designed to discourage postponement of immunization until school entrance were reported in 46 per cent of the returned questionnaires.

The question regarding the per cent of immunizations made by private physicians, health department personnel, and school physicians was answered variably and is difficult to interpret. It is evident that the question as phrased was open to more than one interpretation, but unfortunately this did not show up in the trial run.

The health department is credited with all of the immunizations performed in only 2 per cent of the reports, and the school physician in slightly more than 1 per cent. More than half the immunizations are listed as being done by the private physician in 43 per cent of the reports, by the health department in 18 per cent, and by the school physician in 2 per cent. These figures are not mutually exclusive.

EXAMINATION OF SCHOOL PERSONNEL

Teachers and other school personnel form part of the environment to which the child is exposed. Preëmployment and periodic examinations are a means of evaluating the health of the human part of the child's school surroundings.

A preëmployment examination is required of teachers and administrative staff in 575 (58 per cent) of the 1,003 communities reported. Preëmployment examination of custodians, bus drivers, cafeteria staff, and other workers is required in 541 cases (54 per cent).

Analysis of replies to this question reveals that health examinations of teachers and other school personnel prior to employment are required in a little more than half of the communities reporting and that follow-up appraisals on any regular basis are mandatory in less than half the communities, 49 per cent for teachers and 44 per cent for other employees. The intimate contact that teachers have with the children in their charge certainly warrants early extension of measures to make sure that the health of teachers is good. The case is equally strong for initial and periodic appraisal of the health status of food handlers, bus drivers, custodians, and maintenance staff who directly or indirectly deal with school children. With appreciation of the fact that periodic health examinations are only a part of the essential program, it can be said that efforts to improve this situation need to be strongly implemented.

PHYSICIAN AID TO DEVELOPMENT OF HEALTH INSTRUCTION

Health concepts change rapidly. Individual physicians and their professional societies can help schools to keep abreast of these changes. They are also a valuable resource in evaluating the scientific accuracy of films, pamphlets, texts, and other teaching materials, and because of their acquaintance with local health problems are in a position to suggest

pertinent topics for health instruction.

Medical societies reported that they had helped in the development of health instruction in one or more of the above ways in 23 per cent of the returns. Although this is not a high proportion, it indicates a more extensive relationship of physicians with health instruction than might be expected. It is hoped that this kind of coöperation between physicians and the schools will become increasingly common.

Some comments, explanations, or extended remarks were made on 36 per cent of the returned questionnaires. Typical comments, excerpts, and abstracts will be found in the full report to be published soon.

COMMENTS

The report, as a whole, reveals an unexpected interest and a considerable degree of participation by physicians and medical societies in the health aspects of the school program. The areas of relative deficiency can be improved as school personnel and physicians learn to work coöperatively as has been demonstrated in areas where significant advances have been made.

The full report of this survey, including tabulations of responses by census districts and supplementary remarks by those completing the questionnaire, will be published soon.

RECOMMENDATIONS

As a result of this study, and in consideration of the relationship of its findings to generally accepted school health policies and principles, the following recommendations are made:

1. That medical societies designate to a school health committee, or other appropriate committee of the society, the responsibility for counseling and advising with school and health department officials on the medical aspects of the school health program.

2. That the family physician, through his professional organization—the local medical society—be brought into the school health program during its planning stages so that he may participate understandingly in execution of the program.

3. That a committee or council be formed in the school community which will give attention to school health problems and provide a simple, orderly way of coördinating the efforts of those concerned with the health of school age children.

4. That policies for communicable disease control, emergency care, screening tests, medical examinations, and follow through and care of school children be worked out jointly by school personnel, practising physicians, and health department staff with emphasis on local solution to local problems.

5. That responsibilities of the school, the health department, and the medical society be broadly delineated on the basis of function, with the task of the school defined as teaching, that of the health department as preventing disease and protecting community health, and that of the medical society as advancing medical care.

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Field Training for Health Education*†

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THE title of this paper as listed allows me to consider (1) field training *in* health education as it applies to personnel other than health educators, and (2) field training *of* the professional public health educators themselves.

FIELD TRAINING IN HEALTH EDUCATION

If we believe that all public health personnel do health education, and I doubt that anyone here would challenge this statement, should we not then plan in such a way that all professional personnel would have an opportunity for field training experiences in health education? The amount and type of health education training experiences will have to be planned to meet the needs of the other professional personnel. They should include orientation, observation, and practical experiences in health education. Another important factor is, who is best qualified to guide and plan these activities? If a health educator is on the staff, this person could certainly be utilized in such training plans. It is the hope that, at some time in the future, every field training center will have a health educator who will give guidance to the health officer, nurse, sanitarian, sanitary engineer, statistician, nutritionist, and others in field training. If field training centers are ever accredited by the American Public Health Association, I hope that each center will have a professionally trained and experienced public health educator on the staff.

FIELD TRAINING OF PUBLIC HEALTH EDUCATORS

A. Graduate Field Training—

At the October, 1949, meetings of the American Public Health Association, a subcommittee of the Public Health Education Section reported on an "Investigation of Types of Health Education Personnel Needed Throughout the Country." It was found that there were 100 budgeted but vacant positions available which require the M.P.H. or the M.S.P.H. degree. These vacancies were listed as follows:

State and Federal Official Health Agencies	37
Local Health Departments	22
Voluntary Health Agencies	36
Colleges and Universities	5
	100

Whether this number will increase or decrease in the near future is a matter of conjecture. This group of individuals will have to be recruited and trained, and the training usually includes three months of field training in addition to the academic training at a graduate school of public health.

Let us see what kinds of people these 100 individuals are when they start graduate training. Unlike most other public health personnel, the health educator usually has not had undergraduate

* Presented before a Joint Session of the Health Officers and Public Health Nursing Sections of the American Public Health Association at the Seventy-eighth Annual Meeting in St. Louis, Mo., November 2, 1950.

† From the Communicable Disease Center, Public Health Service, Federal Security Agency, Atlanta, Ga.

or prehealth education training, at least not in the same sense that we consider premedical or prenursing training. Rather, these individuals have been trained in a natural science, or in education, or in social science, or in psychology, or in some instances a combination of two or more of these basic fields. Each of these particular disciplines makes a significant contribution to public health. Thus, these individuals come with varied academic backgrounds. They also come with a wide range of aptitudes or abilities. Many of them know very little about public health or how official and voluntary agencies function. They probably know even less about the duties of the many professional public health workers, including health educators. They differ also in their degree of maturity, even in actual age. Some are very young—recent graduates of a 4 year college; others have had years of experience related to their basic background.

This group of 100 individuals will need to be recruited and trained in our graduate schools of public health. These accredited schools of public health have different requirements concerning field training. Some of them grant the graduate degree before the individual has field training; this sometimes results in immediate employment of graduates who may never have the opportunity for a supervised field experience. Most of these students, however, will be assigned to field training centers for 3 months practical field experience. For the vast majority of these students, this 3 month period is the only preservice field training they will receive.

Certainly we can quickly see that this period needs to be of high quality and requires very careful planning and supervision if it is to meet the individual needs of the person in training. I should like to make a real plea for planned coördination and coöperation between the state agency sponsoring this person, the graduate school of public health, and the state and local agencies where the field training is to be given.

Locating adequate field training centers for 100 persons each year is no easy task, especially if we try to develop some standard criteria for the selection of training centers, one of the most important of which seems to be that a trained health educator be on the staff to guide the training activities involved.

B. Apprentice Training—

Eleven states have started or are planning an apprenticeship or similar type of health education field training program. This kind of training has been used by numerous industries for many, many years. In the field of public health education, it is a relatively new type of training.

What is the need for an apprentice training program? Most individuals have entered graduate training in health education without having an understanding of community health problems, the field of public health, what health education is, or what health educators do. Furthermore, they have no way of knowing whether they have the aptitudes that will lead toward success in a career in health education. The apprentice training program has developed because these needs are acute, and because one year of graduate training in a school of public health seems to be too short a period to answer the needs I have just listed, as well as provide the theory and fundamental knowledge essential to the health educator.

The apprentice period is a trial period. It has several objectives which include:

1. To provide an opportunity through orientation, observation, reading, and program participation for the individual to learn what the health department does, as well as what other agencies do in attempting to solve community health problems.
2. To provide an opportunity for the apprentice to learn what health education is, what other public health personnel do, and what health educators do.

3. To provide an opportunity for the apprentice to determine for himself or herself—Is this the career in which I wish to become fully qualified? If at any time, the answer becomes a *no*, the apprentice may discontinue his training.
4. To permit apprentice appraisal by the supervisors. If the apprentice has the opportunity of being assigned for four 3 month training periods in four separate training centers, the collective opinions of all the supervisors is a reasonably sound basis for recommending or refusing to recommend that this individual be sent to a graduate school of public health.
5. To provide an opportunity for a background that will make the graduate academic training much more meaningful.

Because the apprentice field training program is so new in health education, we are not certain what is the typical length of time that should be required. At least one state has a full year of apprentice training for those who have just been graduated with a bachelor's degree. It may be that this period could be shortened for individuals who have had several year's employment, especially if the experience is in a field closely related to public health education.

C. Undergraduate field training—

Some of our undergraduate colleges grant bachelors' degrees in health education. Many colleges have majors in physical education, or in school health education, and a few in public health education. There seems to be an increasing desire for some of these institutions to require a period of field training. I am not certain what or where all of this type of training will be given. Some institutions have looked to the health departments for assistance with field training, and will continue to do so in the future. The graduates of these institutions may become teachers or may be employed by voluntary agencies. A few may want to continue graduate training in public health.

D. Other types of field training—

1. Orientation:
   New employees may receive a planned orientation program.
   Health educators may assist in the orientation of other personnel, or they may participate in an orientation program as new employees.
2. Observation:
   Health educators are frequently responsible for the planning for foreign and other visitors who come to their agency.
   Health educators plan observation programs for other personnel and they receive this type of training from other personnel of their agency or from another agency.

SUMMARY

1. It is felt that all professional public health personnel should be given well planned and supervised field training activities in public health education. These activities will include brief orientation and observation periods, and will also include actual practical experiences in health education.

2. The field training program of the professional public health educator should include at least 3 months of supervised practical experience in connection with the graduate public health degree.

It may also include a supervised apprenticeship period prior to entrance in the graduate school of public health.

Some undergraduate colleges are now giving, and others are planning to give one quarter or one semester of practical field experience in health education as a requirement for the baccalaureate degree.

3. Some plan should be developed that will permit the coördination of planning between the undergraduate college, the graduate school of public health, the agency sponsoring the student in a graduate school of public health, and the state and local agencies providing the several types of field training activities.

Dental Caries in New Zealand and the United States*

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A FELLOWSHIP granted by the World Health Organization enabled me to study the public health dental program of New Zealand during the early part of 1950.[1]

New Zealand's dental program, operated by the Department of Health since 1920, attempts to provide dental care systematically and at regular intervals to every elementary school child. This care is given on the same basis as public education. Since 1945, the coverage has been almost nation-wide.

The major portion of my study involved the gathering of dental caries prevalence data for school children aged 7–14. In all, 4,072 New Zealand children, equitably divided as to age, sex, and rural or urban residence, were examined and their dental caries experience was recorded (DMF).

Public health dentists in the United States consider DMF examinations to be a valuable tool. DMF not only defines the magnitude of a dental caries problem but offers one method of evaluating dental programs. Public health dentists consider the number of missing permanent teeth (M or "tooth mortality") to be the most objective index of the effectiveness of a dental caries control program.

Since this standard DMF measurement was used in the New Zealand study, it is possible to compare the findings with like data for the United States.

The data for New Zealand were collected by a mirror and explorer examination of the teeth of each child. Three things were counted and recorded for the permanent teeth:

1. The number found decayed and untreated (D)
2. The number missing or still present but beyond repair and therefore indicated for extraction (M)
3. The number treated by a filling (F).

The sum of these conditions gave the total dental caries experience (DMF) of the child. A tooth which presented both a filling and an untreated lesion was recorded as decayed.

For comparative purposes published data, collected and recorded in like manner, were found for 7 areas of the United States; however, not all of this material covered the 7 to 14 age range, so that comparisons have been limited to the 12–14 year age group. Since dental caries is an accumulative disease, a good picture can be obtained by comparing collections of data on children aged 12–14, for at that age level almost all children have several attacked teeth and statistical comparisons are reliable.

The New Zealand data are on a sample of children who were drawn in such a way as to be as representative of the country's school population as possible, considering the time that was available for the survey. The sample includes

* Presented before the Dental Health Section of the American Public Health Association at the Seventy-eighth Annual Meeting in St. Louis, Mo., November 3, 1950.

TABLE 1

Decayed, Missing, and Filled (DMF) Permanent Teeth and Percentage Composition of DMF in Children Age 12–14—New Zealand and Specified Areas of the United States

Area	No. of Children	Decayed		Missing		Filled		DMF		Percentage Composition			
		No.	Per Child	No.	Per Child	No.	Per Child	No.	Per Child	DMF	D	M	F
Michigan (1945—2 cities)	9,641	51,236	5.31	11,226	1.16	27,314	2.83	89,776	9.31	100.0	57.1	12.5	30.4
Indiana (1940—2 cities)	514	2,867	5.58	311	0.61	1,559	3.03	4,737	9.22	100.0	60.5	6.6	32.9
New Zealand (1950)	1,455	1,287	0.89	423	0.29	10,768	7.40	12,478	8.58	100.0	10.3	3.4	86.3
Illinois (1940—4 cities)	1,338	4,032	3.01	846	0.63	4,975	3.72	9,853	7.36	100.0	40.9	8.6	50.5
Ohio (1940—5 cities)	2,015	8,901	4.42	1,482	0.74	3,629	1.80	14,012	6.95	100.0	63.5	10.6	25.9
New Jersey (1946)	14,920	50,197	3.36	16,164	1.08	37,269	2.50	103,630	6.95	100.0	48.4	15.6	36.0
Minnesota (1947—Nicollet Co.)	679	1,701	2.51	272	0.40	2,298	3.38	4,271	6.29	100.0	39.8	6.4	53.8
Maryland (1938—Hagerstown)	1,856	4,776	2.57	1,222	0.66	2,661	1.43	8,659	4.67	100.0	55.2	14.1	30.7

both sexes, and rural as well as urban children in due proportions.

No comparable body of data for American school children is available. I have therefore had to take whatever appropriate and well ascertained data I could find for areas in this country. As a whole, the seven sets of American figures chosen, all of which come from cities except for the data on Minnesota and New Jersey, may or may not be representative of the 6 to 7 million children aged 12–14 in the United States. However, since New Zealand has no fluoride-bearing waters, I have not used data for any American city in which the water contains a significant amount of fluorine.

Thus, the American data are on 28,346 children aged 12–14 years. They live in Grand Rapids and Muskegon, Mich.[2]; Elkhart and Michigan City, Ind.; Evanston, Oak Park, Quincy, and Waukegan, Ill.; Lima, Marion, Middletown, Portsmouth, and Zanesville, Ohio[3]; Nicollet County, Minnesota[4]; Hagerstown, Md.[5]; and New Jersey.[6]

The number of teeth in each category of DMF for the 12, 13, and 14 year old children from each area in the United States and New Zealand were added together and divided by the number of children, to obtain the rate per child. The areas were then ranked according to the obtained DMF per child.

Taking the number of DMF teeth as 100 per cent, calculations were made as to what percentage of the DMF each of its components comprised. The data are presented in Table 1, and the bar chart provides a graphic analysis of the facts.

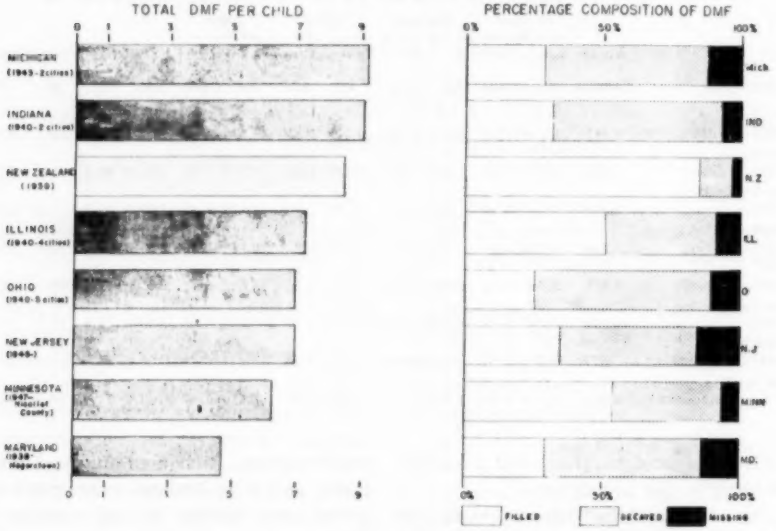
These data emphasize the amount of dental caries prevalence in children. They document the well known fact that tooth decay is a disease problem of the first magnitude. The number of permanent teeth per child attacked by caries ranges from 4.7 to 9.3. Five of the areas have a rate of 7 or more. New Zealand has often been said to have the highest dental caries rates in the world. In this table, New Zealand ranks third. The disease appears to be quite as great a problem in some of the heavily populated areas of the United States as in New Zealand.

The percentage composition of this dental caries experience reaffirms another

CHART 1

DECAYED, MISSING, AND FILLED (DMF) PERMANENT TEETH AND PERCENT OF EACH

32,418 CHILDREN AGE 12-14, IN NEW ZEALAND AND SEVEN AREAS OF THE UNITED STATES.



well known fact, namely, that the disparity between dental needs and dental services is wide.

The proportion of filled teeth in the total number of attacked teeth is a quantitative measure of how closely the dental needs have been met. In all 7 areas of the United States the proportion of total DMF in F or filled teeth is low, varying from one-fourth to one-half. A corollary of that situation is the fact that the proportion of DMF in D (representing teeth that are untreated but still savable) ranges from 40 to 64 per cent in the 7 American areas. The New Zealand percentages contrast sharply with that picture, since 86 per cent of the DMF is in F and only 10 per cent is in D.

The proportion of DMF in M or missing teeth is particularly significant since that percentage reflects the terminal result of uncontrolled caries. Although New Zealand has one of the highest attack rates, its tooth mortality rate is the lowest. The nearest percentage of missing teeth for a group of American children is almost twice as high, and one group shows a percentage nearly five times higher than the proportion for New Zealand children. Hagerstown, for example, with an attack rate slightly more than half of New Zealand's, had four times the amount of tooth mortality.

As stated earlier, there is no more objective index of the effectiveness of a caries control program than the M component of DMF. Public health dentistry aims at the prevention of tooth loss. The extracted teeth part of the M rate reflects a certain kind of dental service. But it also represents failure to preserve the teeth.

Thus, to the extent that a high proportion of attacked teeth have been treated in the form of fillings, and to the extent that a low tooth mortality rate has been achieved, the data obtained in this survey indicate that New Zealand's public dental program has gained

a large measure of success in controlling the effects of caries in school children.

This is not to say that the findings of this survey establish New Zealand's program as a model one. The DMF method does not take account of such important aspects of dentistry as the health of supporting tissues or the extent of malocclusion, nor was it possible, in this survey, to evaluate New Zealand's program in terms of ideal dental care.

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Social Hygiene Day Is February 7

National Social Hygiene Day for 1951 is February 7. Its theme is Safeguard our Stronghold—The Family. The November *Social Hygiene News* of the American Social Hygiene Association is devoted to building up sentiment for observance of the day, not only on February 7 but throughout the year. With a series of photographs and little stories it portrays the various situations that need community action and suggestions for observance of Social Hygiene Day. The folder together with a kit of program and publicity ads is available from the American Social Hygiene Association, New York 19, N. Y.

Some Factors in the Epidemiology of Histoplasmin Sensitivity in Williamson County, Tennessee*

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WHEN the Williamson County Tuberculosis Study was initiated almost twenty years ago, the clinician and roentgenologist usually experienced little difficulty in making an x-ray diagnosis of tuberculosis. A soft infiltrate seen in the upper lung field of a chest film was inevitably labelled tuberculous, and calcified pulmonary nodules were almost never believed to be anything but calcium deposited in a primary tuberculous lesion. Yet, during the first analysis of material three years after the Study began, a curious observation was made that was destined to upset certain well established dicta, and to lead to the eventual realization that "all that calcifies is not tuberculosis." Roentgenological and clinical diagnoses of tuberculosis, made according to the then accepted criteria, were found to be associated with negative tuberculin reactions in a significant number of instances. The investigators first concluded that "tuberculin testing of contacts does not identify all individuals who have been infected."[1] Investigation of school children in Williamson County in 1937 revealed that calcified pulmonary lesions were present in negative reactors to tuberculin just about as frequently as in positive reactors.[2] Subsequent studies done in 1939[3] and in 1941[4] strengthened the original observations, and the investigators were perplexed. Did these findings indicate that the tuberculin test was not as specific as had been believed, or did some agent other than the tubercle bacillus produce lesions which resembled tuberculosis? Christie and Peterson at Vanderbilt University applied themselves to the problem. Using several antigens in addition to tuberculin, to test a group of children with calcified pulmonary lesions, they discovered that many more reacted to histoplasmin than to tuberculin.[5] In a comprehensive review of the subject, and from their own findings, they concluded that "an immunologic relationship between histoplasmin sensitivity and the problem of pulmonary calcification" was suggested by the accumulated evidence. Palmer's studies supported the observation and conclusion.[6]

Since these first significant reports, the literature has been liberally studded with accounts of other investigations of histoplasmin sensitivity and histoplasmosis, but a number of crucial factors in their epidemiology remain obscure. As yet the source of *Histoplasma capsulatum* in nature has not been determined, nor has its mode of transmission been established. These are but two of the most significant problems. No solution for them is offered here, but it is hoped

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that some clues may be provided by the observations that have been made during the past five years in Williamson County.

PREVALENCE OF HISTOPLASMIN SENSITIVITY

In these studies of histoplasmin sen-

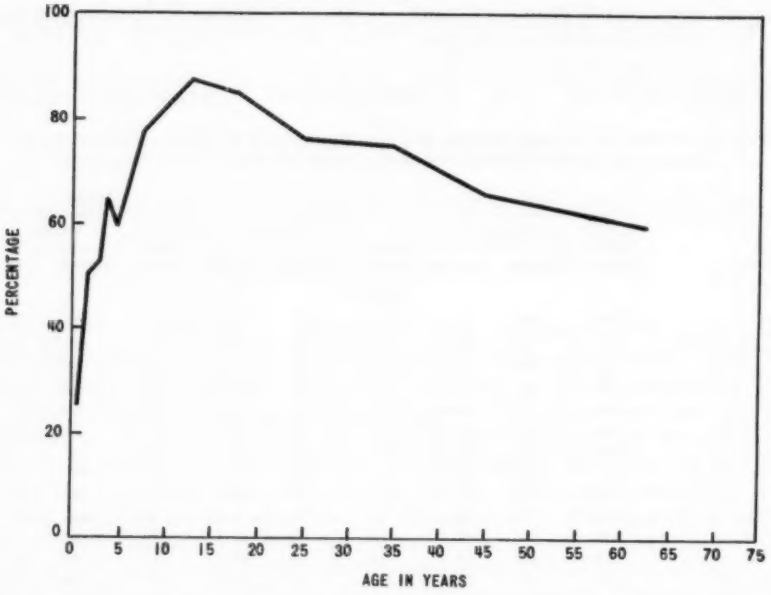
TABLE 1

Number of Persons Tested with Histoplasmin and Number and Percentage Positive, by Color, Sex and Age Group, Williamson County, Tennessee, August, 1945–July, 1950

Age in Years	Total			Male			Female		
	Number Tested	Positive		Number Tested	Positive		Number Tested	Positive	
		Number	Per cent		Number	Per cent		Number	Per cent
				Total					
Total	5,044	3,610	71.6	2,164	1,560	72.1	2,880	2,050	71.2
Under 1	251	62	24.7	132	34	25.8	119	28	23.5
1	287	145	50.5	157	84	53.5	130	61	46.9
2	238	124	52.1	112	59	52.7	126	65	51.6
3	234	153	65.4	114	79	69.3	120	74	61.7
4	183	108	59.0	96	58	60.4	87	50	57.5
5–9	1,055	818	77.5	501	394	78.6	554	424	76.5
10–14	982	856	87.2	453	389	85.9	529	467	88.3
15–19	615	521	84.7	245	213	86.9	370	308	83.2
20–29	287	219	76.3	59	50	84.7	228	169	74.1
30–39	359	266	74.1	80	66	82.5	279	200	71.7
40–49	220	143	65.0	68	44	64.7	152	99	65.1
50 and over	333	195	58.6	147	90	61.2	186	105	56.5
				White					
Total	3,868	2,806	72.5	1,647	1,201	72.9	2,221	1,605	72.3
Under 1	182	49	26.9	90	24	26.7	92	25	27.2
1	209	113	54.1	116	62	53.4	93	51	54.8
2	169	93	55.0	79	44	55.7	90	49	54.4
3	173	114	65.9	88	62	70.5	85	52	61.2
4	132	78	59.1	65	39	60.0	67	39	58.2
5–9	817	638	78.1	399	314	78.7	418	324	77.5
10–14	786	689	87.7	358	312	87.2	428	377	88.1
15–19	431	368	85.4	166	147	88.6	265	221	83.4
20–29	223	173	77.6	45	39	86.7	178	134	75.3
30–39	293	220	75.1	65	51	78.5	228	169	74.1
40–49	180	118	65.6	61	40	65.6	119	78	65.5
50 and over	273	153	56.0	115	67	58.3	158	86	54.4
				Colored					
Total	1,176	804	68.4	517	359	69.4	659	445	67.5
Under 1	69	13	18.8	42	10	23.8	27	3	11.1
1	78	32	41.0	41	22	53.7	37	10	27.0
2	69	31	44.9	33	15	45.5	36	16	44.4
3	61	39	63.9	26	17	65.4	35	22	62.9
4	51	30	58.8	31	19	61.3	20	11	55.0
5–9	238	180	75.6	102	80	78.4	136	100	73.5
10–14	196	167	85.2	95	77	81.1	101	90	89.1
15–19	184	153	83.2	79	66	83.5	105	87	82.9
20–29	64	46	71.9	14	11	78.6	50	35	70.0
30–39	66	46	69.7	15	15	100.0	51	31	60.8
40–49	40	25	62.5	7	4	*	33	21	63.6
50 and over	60	42	70.0	32	23	71.9	28	19	67.9

* Percentage not figured when less than 10 persons were tested.

FIGURE 1—Percentage of Persons Positive to Histoplasmin by Age, Williamson County, Tennessee, August, 1945–July, 1950



sitivity, persons in all age groups have been included. However, efforts were concentrated on children under 5 years of age because in this age group was offered the best opportunity to observe the evolution of histoplasmin sensitivity and calcification. Between August, 1945, when the program began, and July, 1950, 5,044 individuals have been tested with histoplasmin.* Of these, 2,164 were males and 2,880 females; 3,868 were white and 1,176 colored. Children under 5 years of age comprised 24 per cent of the total number tested, those 5–19 years of age, 53 per cent, and individuals 20 years of age and over, 24 per cent. Table 1 shows the number of persons tested with histoplasmin, and the number and percentage positive, by color, sex, and age group.

The prevalence of histoplasmin sensitivity was found to rise abruptly from 25 per cent in the first year of life to a peak of 87 per cent at 10–14 years of age, and then to decline gradually as shown in Figure 1. The pattern of this curve was similar for males and females, and for white and colored persons.

No difference was noted in the percentage of positive reactors by sex, but the percentage of colored persons who reacted was slightly less than that of white persons. The greatest difference in sensitivity for white and colored was observed in children under 5 years of age, where, for colored females, the percentage of positive reactors was unusually low. The explanation for this unexpected finding is not clear. It may be due to the influence of some hidden selective factor, for certainly there is no evidence that individuals in this group are either less susceptible or less exposed to the sensitizing agent.

The observations noted above are not

* The histoplasmin used in these studies was obtained from Drs. Christie and Peterson. Antigen from the same lot was used practically throughout. It was administered intracutaneously in doses of 0.1 ml. of a 1–100 solution. Results were read in 48 hours.

entirely in accord with those reported by Emmons, *et al.*[7] and by Furcolow, *et al.*[8] In Furcolow's study there was no difference in histoplasmin sensitivity by sex up to the age of 20, but thereafter the proportion of sensitized individuals was higher for males than for females. Emmons also reported a higher occurrence of allergy in adult males. In both of these studies, selected adult groups were tested. Furcolow's study group was composed predominantly of urban males in local or federal government service. In Williamson County the population is about 75 per cent rural in residence, and the only selective factor which operated in this study was the usual unavailability of working males for testing.

Since the occurrence of sensitivity is similar among adult males and females in Williamson County, it may be inferred that, where reported differences have been observed, they result rather from an inequality of exposure than from any real sex difference in susceptibility to infection with the agent.

The collected data indicate that the sensitizing agent which produces allergy to histoplasmin is quite liberally distributed in Williamson County, and that all segments of the population come in contact with the agent. The rising frequency of sensitivity with age up to 15 years may be explained by increasing opportunities for exposure as children grow older and expand their activities. The decline in sensitivity which occurs after the age of 15 may be due to several factors. It may result either from a loss of allergy in previously sensitized individuals whose opportunity for exposure to the agent diminishes in later life; or from the eventual development of immunity in some people who have had repeated exposures to the agent. It is interesting to note that Furcolow's data show a similar decline in sensitivity with later age, but in his study the peak of sensitivity was reached later than in ours, and most of the subsequent decline appeared to be in the females.

LOSS OF SENSITIVITY

Between August, 1945, and July, 1950, 855 persons were retested at least once with histoplasmin (Table 2). Of this number, 506 had been positive and 349 negative on the first test. Of those positive on the first test, 426, or 84.2 per cent, were still positive when retested. One hundred and eighty-two, or 52.1 per cent, of those negative on the first test had acquired sensitivity by the time of the second test.

Attention was focused particularly on those who were originally positive because they offered the best possibility of obtaining information on the allergenic potency of the sensitizing agent, and on the enduring qualities of the allergy. Eighty of the 506 individuals who were positive on the first test were found to have reverted to negative after an average interval of 25 months. The total reversion rate was 15.8 per cent, but it was by no means uniform at all ages, as shown in Table 3 and Figure 2.

Of the infants, under 1 year of age

TABLE 2

Number of Persons Retested with Histoplasmin According to Results of First and Second Tests, Williamson County, Tennessee, August, 1945–July, 1950

Result of First Test	Total		Result of Second Test: Positive		Result of Second Test: Negative	
	Number	Per cent	Number	Per cent	Number	Per cent
Total	855	100.0	608	71.1	247	28.9
Positive	506	100.0	426	84.2	80	15.8
Negative	349	100.0	182	52.1	167	47.9

FIGURE 2—Percentage of Persons Positive to Histoplasmin on First Test Who Were Negative on Second Test, by Age at First Test, Williamson County, Tennessee, August, 1945–July, 1950

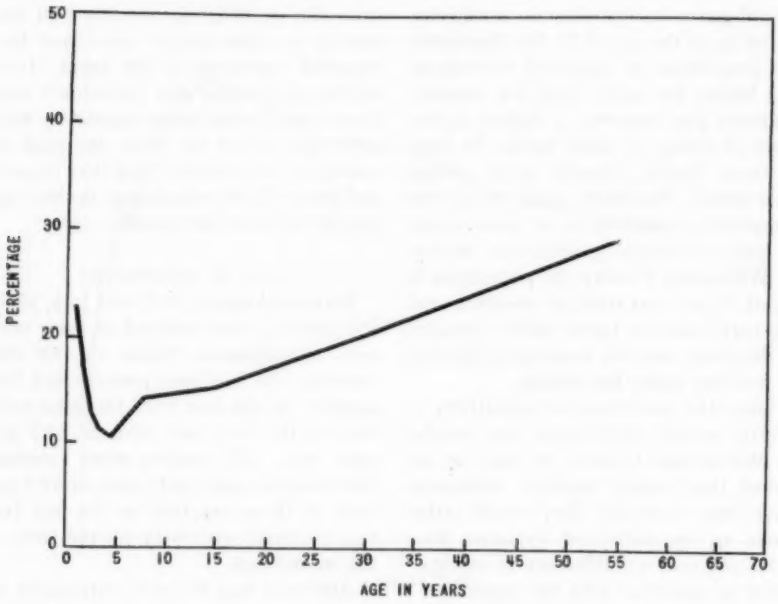


TABLE 3

Number of Persons Positive to Histoplasmin on First Test Who Were Retested and Number and Percentage Negative on Second Test, by Age at First Test, Williamson County, Tennessee, August, 1945–July, 1950

Age in Years	*Total*	*Negative*	
		Number	*Per cent*
Total	506	80	15.8
Under 1	30	7	23.3
1	53	9	17.0
2	40	5	12.5
3	62	7	11.3
4	41	4	9.8
5–9	97	14	14.4
10–19	107	16	15.0
20–39	45	9	20.0
40 and over	31	9	29.0

when first tested, 23 per cent were negative when retested. The reversion rate then fell abruptly but steadily at each succeeding age until it reached a low point of about 10 per cent at age 4. The percentage of individuals who became negative then increased with age to a high point of 29 per cent in those 40 years of age and over.

It is apparent that histoplasmin allergy is of a much lower order of endurance than tuberculin allergy. But if allergy in the observed group was not permanent, neither was the anergy that developed in those who reverted. In a small number of individuals who had a series of histoplasmin tests, some have gone from positive to negative to positive again. More information about such vacillations of sensitivity should be available in the future as a result of the program which has now been instituted of retesting individuals at 6 month intervals.

It is interesting to speculate on possible explanations for the varying reversion rates at different ages. The ubiquity of the sensitizing agent in Williamson County is apparent from the prevalence data presented above. Persistence of

allergy must be an expression either of a continued, active, first infection, or of reinfections. In infants under 1 year of age, reversion rates are high while prevalence is relatively low. Both observations point to a comparatively infrequent opportunity for first infection and for reinfection at this age. In the older ages, the reversion rates are the highest, but the prevalence of sensitivity has declined from its peak. Again, this may be an expression of a declining frequency of contact with the sensitizing agent. It is also possible, however, that after repeated reinfections some immunity may develop, and this immunity is apt to be manifested most in older people who have had a long experience with the agent. It is hardly likely that the explanation lies in progressive desensitization produced by repeated exposures, because experiments done with tuberculin indicate that massive doses administered over prolonged periods are required to accomplish anergy. These conditions could hardly be expected to occur in nature, even if it is assumed that tuberculin and histoplasmin allergy are comparable.

INFLUENCE OF SEASON

As the study progressed, it was noted that the prevalence of histoplasmin sensitivity varied at different times of the year, and from one year to another. Not all segments of the population were tested throughout the year, so it was not possible to make an overall analysis of sensitivity by season. The most sustained observation was made of children under 5 years of age, and since they comprised about one-fourth of the whole, analysis of the data was made for this group alone. The data are shown in Table 4 and Figure 3 for two periods of time, August 1945, to December, 1949, and for January to July, 1950. The 1950 findings are presented separately because tabulations for only the first 7 months of the year are available, and the 1950 percentages have been so much higher than in the past that undue weight would have been cast on the January to July data of previous years.

Prevalence of sensitivity is at its lowest in children under 5 years of age during the winter and early spring. A rise occurs throughout the summer to a peak in the early fall, and then there is a decline. The 1950 curve parallels that of previous years, but is on a higher level.

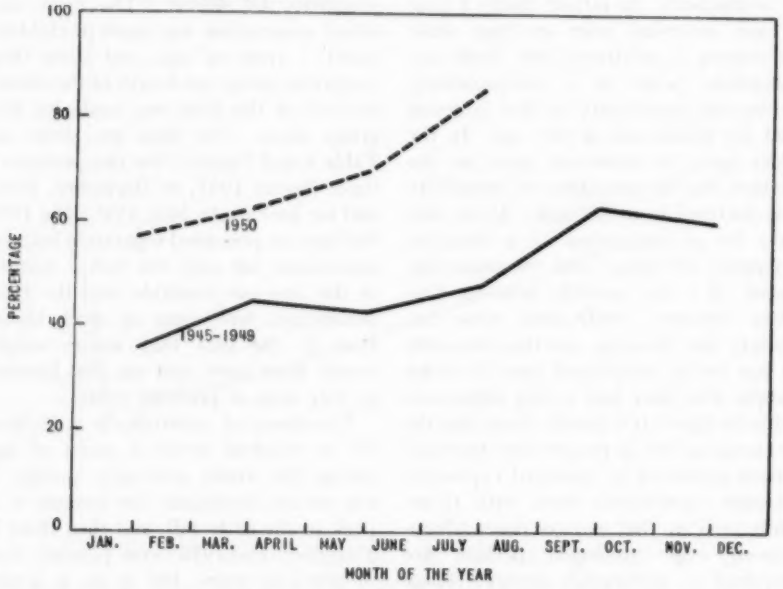
The pattern of the curve for children under 2 and for those 2–4 years of age is similar, but varies in degree. The greatest seasonal variation is noted in children under 2 years of age, as shown in Table 5. Here the variation is significantly greater than could have occurred by chance. For the 2–4 year age group the differences are within the limits of probability.

TABLE 4

Number of Children under 5 Years of Age Tested with Histoplasmin and Number and Percentage Positive by Season of the Year, Williamson County, Tennessee, August, 1945–December, 1949, and January–July, 1950

Month of the Year	1945–1949			1950		
	Number Tested	Positive		Number Tested	Positive	
		Number	Per cent		Number	Per cent
Total	1006	464	46.1	187	128	68.4
January–February	102	36	35.3	16	9	56.2
March–April	187	83	44.4	79	49	62.0
May–June	316	133	42.1	51	35	68.6
July–August	242	114	47.1	41	35	85.4
September–October	112	70	62.5			
November–December	47	28	59.6			

FIGURE 3—Percentage of Children under 5 Years of Age Positive to Histoplasmin, by Season, Williamson County, Tennessee, August, 1945–December, 1949, and January–July, 1950



Several possible explanations may be offered for the seasonal variations in histoplasmin sensitivity. The sensitizing agent may be present in greater abundance at some seasons than at others; or, if a vector is involved in the transmission of the agent, the vector population may vary with season. A third explanation for the observed seasonal variation may lie in the habits and customs of the population. Children under 2 are more apt to be confined indoors during cold and rainy weather than older children, and it is precisely these seasons that correspond with the periods of lowest sensitivity. Also, children under 2 years of age have a rather limited horizon of activity compared to older children. Infants and those under 2 may not come in contact with the agent unless it is brought to them, whereas older children may be exposed to the agent at its source in nature while they are engaged in outdoor play.

TABLE 5

Number of Children under 5 Years of Age Tested with Histoplasmin and Number and Percentage Positive for Two Age Groups, Williamson County, Tennessee, August, 1945–December, 1949

	Under 2 Years			*2–4 Years*		
		Positive			*Positive*	
Month of the Year	*Number Tested*	*Number*	*Per cent*	*Number Tested*	*Number*	*Per cent*
Total	450	154	34.2	556	310	55.8
January–February	47	10	21.3	53	26	47.3
March–April	77	23	29.9	110	60	54.5
May–June	151	43	28.5	165	90	54.5
July–August	102	37	36.3	140	77	55.0
September–October	54	32	59.3	58	38	65.5
November–December	19	9	47.4	28	19	67.9

As has been noted above, the 1950 prevalence is on a much higher level than had been observed during preceding years. This difference cannot be accounted for by any change in procedure, technique of administration of the histoplasmin, or potency of the histoplasmin. A tentative explanation may lie in the unusual weather conditions that have prevailed in Williamson County during 1950. The winter and spring were exceptionally mild and rainy. Summer was relatively cool, and July, especially, was marked by excessive rainfall. These correlations are not entirely conjectural, as will be demonstrated in the next section on the effect of dampness on sensitivity. Local weather bureau meteorological data for the past five years are now being analyzed with the hope that some suggestive explanations for the yearly variations in histoplasmin sensitivity may be found.

EFFECT OF DAMPNESS

An epidemiologic investigation of homes in which at least one child under 5 years of age had been tested with histoplasmin and x-rayed was undertaken during the summer of 1946.* Two hundred and seventy-one homes in which there were 546 children under 15 years of age who had been tested were investigated for economic status, source of drinking water, types of grain cultivated, presence or absence of various animals in and around the house, and dampness of the home and environment. Certain criteria for judging dampness were arbitrarily established.† Analysis of the data revealed that there was no association between histoplasmin sensitivity and any of the factors investigated, with the exception of dampness. Data concerning cows and rodents were suggestive but not conclusive.

There appeared to be a positive association between dampness and histoplasmin sensitivity (Table 6, Figure 4). In damp environments the percentage of children under 15 years of age who reacted to histoplasmin was 86.1; in dry environments near a creek the percentage was 66.1; and in dry environments without a creek, it was 48.9. Apparently the association was not influenced by age except in the very dry environment, where children under 5 years of age experienced a relatively low occurrence of sensitivity. It may be inferred that children of this age are not frequently exposed to infection, in or near the home, if the environment is dry, and since their activity at any appreciable distance from home is limited by their age, they do not have the same opportunity for exposure to the sensitizing agent as children of school age.

TABLE 6

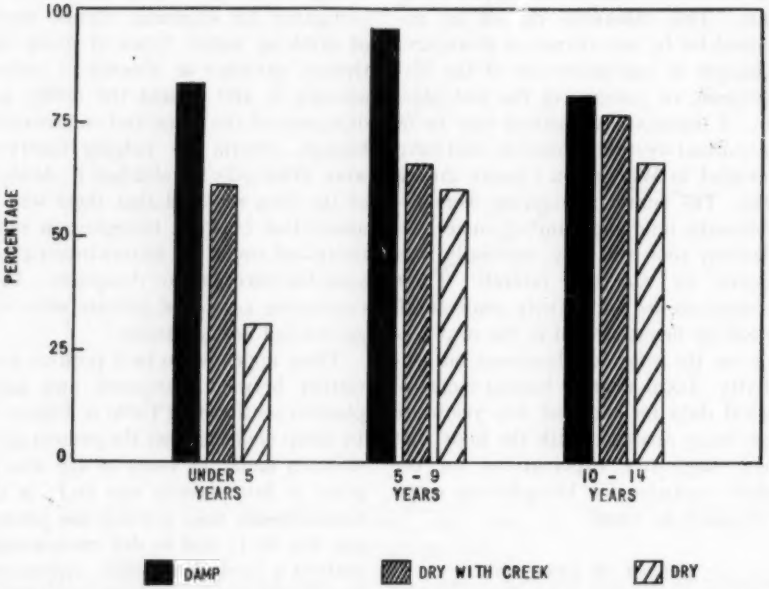
Number and Percentage of Children under 15 Years of Age Reacting to Histoplasmin according to Dampness of Environment, by Age Group, Williamson County, Tennessee, 1946

Age in Years	Damp			Dry with Creek			Dry		
	Number Tested	Positive		Number Tested	Positive		Number Tested	Positive	
		Number	Per cent		Number	Per cent		Number	Per cent
Under 15	72	62	86.1	245	162	66.1	229	112	48.9
Under 5	30	25	83.3	95	58	61.1	98	30	30.6
5–9	21	20	95.2	99	65	65.7	78	47	60.3
10–14	21	17	81.0	51	39	76.5	53	35	66.0

* This program was under the direction of Dr. H. C. Stewart, former Director of the Williamson County Tuberculosis Study, with the assistance of Dr. Robert Nesbitt.

† 1. Damp—evidence of moss in the yard and on trees, creek or pond 100 yds. or closer to the house.
2. Dry with creek—house dry, but creek or pond within 100 yds. of house.
3. Dry—house dry, creek or pond (if any) more than 100 yds. from house.

FIGURE 4—Percentage of Children under 15 Years of Age Positive to Histoplasmin, according to Dampness of Environment. by Age Group, Williamson County, Tennessee, 1946



This correlation between dampness and histoplasmin sensitivity is reasonable considering the nature and growth characteristics of fungi. If dampness is indeed a factor in determining the prevalence of histoplasmin sensitivity, the observed yearly variations may well be explained by differences in precipitation and humidity from year to year.

SUMMARY

1. Between August, 1945, and July, 1950, 5,044 individuals of all ages were tested with histoplasmin in Williamson County, Tennessee. Positive reactions occurred in 25 per cent of those under 1 year of age, then rose abruptly with age to a peak of 87 per cent in those 10–14 years of age. After the age of 15 years, the proportion of positive reactors declined steadily.

2. There was no significant difference in the percentage of positive reactors among males and females at any age, or *in toto*.

3. Colored people showed a lower proportion of positive reactors than white, with the greatest difference manifested in those under 5 years of age.

4. Five hundred and six individuals who had been positive on first test, were retested at an average interval of 25 months. Of this number, 15.8 per cent had reverted to negative by the time of the second test. Reversion rates were highest in those under 1 year of age and in those 40 years of age and over.

5. Seasonal variation in allergy was studied in children under 5 years of age only. In this group histoplasmin sensitivity appeared to be at its lowest level in the winter and early spring. The percentage of positive reactions rose during the summer to a peak in the fall, and then declined.

6. Epidemiological investigation of 271 homes in which at least one child under 5 years of age had been tested, revealed an association between positive reaction and dampness of the environment. This association was particularly marked in children under 5 years of age.

7. Several possible explanations for the above observations have been offered.

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New Jersey Calls Regional Conference

An Eastern States Conference on Local Health Services and Civil Defense has been called by the Governor of New Jersey on the suggestion of his Commission on Local Health Services. The governors of Delaware, Pennsylvania, New York, and Massachusetts have accepted an invitation to be represented by a group of up to 25 citizens at a conference to work out ways and means for improving local health services, particularly in relation to civil defense, in their various states.

The Conference to be held January 22 and 23 at the Nassau Tavern, Princeton, N. J., is being organized by Mrs. Frances Mancusi-Ungaro of Newark, in her capacity as chairman of a Subcommittee on Meetings of the Governor's Commission. The National Health Council, through its National Advisory Committee on Local Health Units, is serving in an advisory capacity. Plans for the Conference were made in early December at a meeting in Trenton attended by representatives from the health departments of the five states.

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THE PROFESSION OF PUBLIC HEALTH

THE interests of the American Public Health Association have become so diversified that, in recent years, no single issue of this *Journal* has been able to represent them all. Inspired by "The Spirit of St. Louis" as manifest at our Seventy-eighth Meeting, the Editor determined that—for once, at least—this objective should be accomplished. The present issue contains thirteen papers, each representing one of the fields of interest exemplified by our thirteen Sections. The scope of knowledges and skills is impressive, ranging from histoplasmin sensitivity in Tennessee to dental caries in New Zealand; from micro-climatology in relation to industrial smogs, to the basic principles governing medical care programs; from sanitation in the underprivileged areas of the world to the role of the physician in school health services; from the survival of enteric organisms in soils to the qualifications of state health officers.

The gradual evolution of the Sections of this Association offers a significant yardstick of the widening scope of public health. The Laboratory Section, the first to be organized, was established in 1899. In 1908, came the Health Officers Section and the Statistics Section; in 1911, the Engineering Section; in 1914, the Industrial Hygiene Section; in 1917, the Food and Nutrition Section. In the 20's, Sections were organized for Maternal and Child Health, Public Health Education, Public Health Nursing, and Epidemiology. In the 40's, Sections were added in School Health, Dental Health and Medical Care. It would not be rash to predict that, before the end of the present decade, we shall have special sections on Mental Health and on Adult Health.

The resulting organizational make-up of the Association is unique in its range and complexity. The American Bar Association and the American Medical Association are much larger in total numbers; but each represents a single discipline. The Bar Association includes only lawyers, the Medical Association, only physicians. The engineering societies include exclusively engineers. The organizations representing social work and nursing bring together professionals and board members in those respective fields. The American Public Health Association, with its thirteen Sections, involves far more than that number of distinct disciplines. The

Health Officers Section is primarily made up of physicians with special training or experience in public administration; but the Maternal and Child Health Section brings in nurses as well. The Laboratory Section includes chemists, as well as bacteriologists; the Industrial Hygiene Section, physicians, engineers, and chemists; the Food and Nutrition Section, nutritionists, as well as chemists and bacteriologists; the Public Health Education Section, trained experts in the fields of pedagogy and community organization; the Medical Care Section, physicians, statisticians, and economists.

Public health is a profession in the sense defined by Webster, as an "occupation, if not purely commercial, mechanical, agricultural, or the like, to which one devotes oneself; a calling in which one professes to have acquired some special knowledge used by way either of instructing, guiding or advising others or of serving them in some art." It is not a branch of medicine or engineering or any other field of special knowledge, but a synthesis of more than a dozen specialized skills in a single common cause. To effect this synthesis is the major function of the American Public Health Association.

A CENTURY OF PUBLIC HEALTH IN HAWAII

WE noted during the past year a number of important anniversaries of significance in the history of public health. As we pass from 1950 to 1951, there is one more milestone which should be recorded.

The oldest municipal departments of health with a continuous and uninterrupted service in the United States (Baltimore, New York, Philadelphia) date back to the last decade of the 18th century and owed their origin to the great yellow fever epidemics of that period. The first State Board of Health, with a similar record of continuity, was established by Massachusetts in 1869. The first sentence of its first *Annual Report* reads as follows: "We congratulate the legislature on the fact that the comprehensive idea included under the term of 'State Medicine' has at length been established in Massachusetts"—an illustration of the fact that the objective descriptive terms of one era may become the fighting words of a subsequent period. Another sentence, which occurs later in this same report reads as follows: "Nothing which pertains to humanity in its widest sense will this Board deem foreign to its aim." Dr. Bowditch, Dr. Derby, and their associates deserve great credit for that one.

Nearly twenty years earlier, however, in the islands of the Pacific, a step had already been taken which may well challenge the claims of priority for the Old Bay State. On December 10, 1850, the Privy Council of King Kamehameha III adopted a resolution creating a Board of Health for the Kingdom of Hawaii, with Dr. T. C. B. Rooke, Port Physician, as its Chairman. This Board has continued to function to the present day. When Queen Liliuokalani was deposed in 1893, Hawaii became a Republic. It was annexed to the United States in 1898 and made a Territory in 1900. It may perhaps have been admitted as a State by the time this editorial appears. When that end is accomplished, the priority of the Massachusetts State Department of Health may perhaps be open to challenge.

The record of the Board of Health of Hawaii (as reviewed in a recent report[1] by Dr. C. L. Wilbar, its present President) is worthy of its long history. Its 1851 budget of $10,000 has been multiplied more than three-hundred-fold. Its food

and drug laboratory and its bureau of vital statistics date from the 1890's. The first public health nurse was employed by the Palama Settlement (a voluntary organization) in 1906. A Bureau of Tuberculosis was organized in 1910, a public health engineering laboratory in 1913. In 1949, the maternal death rate of the Territory was 0.5 and its infant mortality rate, 25.1. No death from typhoid had occurred for three years and no death from diphtheria for five years. Particularly effective work has been done in the field of Health Education.

Prof. Ira V. Hiscock in a recent survey of Public Health in Hawaii [2] states that "This study disclosed marked progress in the development of public health organization and services and dramatic results from these programs during the past twenty years. Hawaii is blessed with many natural resources which enrich the life of her people; but the modern comforts and scientific benefits so abundantly provided are the results of vision, energy and careful planning of community leaders. The continued achievements in the promotion of health and the reduction of preventable diseases indicate foresight, judgment, loyalty and skill, with human benefits and significance comparable to the most advanced communities and states on the mainland. At the same time a generally apparent attitude of constructive self-criticism, coupled with the application of searching appraisal methods, gives promise of continuing advances in the health program of Hawaii in line with new scientific advances and tested procedures."

We congratulate Hawaii on the record of its health achievements, and trust that we may soon claim them as the triumphs of the Forty-ninth State of the Union.

1. *100th Anniversary Report, Board of Health of Hawaii. 1850–1950.* Department of Health, Territory of Hawaii. 1950.
2. Public Health in Hawaii, 1950. *Hawaii M. J.* Vol. X, No. 2 (Nov.–Dec.), 1950.

THE PROBLEMS OF VIROLOGY

THE frontier offers always a unique challenge to the human spirit; and the viruses represent one of our most alluring frontiers—not only for disease control but for the understanding of the basic processes of life itself. The more important problems in this field were excellently reviewed in a Symposium on Viral and Rickettsial Diseases at the Fiftieth Anniversary of the Society of American Bacteriologists last spring.[1]

The entities we call "viruses" are of a highly heterogeneous nature and have already been divided into major groups. The last two International Congresses for microbiology have established working committees on classification and nomenclature. At one extreme is the tobacco mosaic virus, isolated in crystalline form by Stanley in 1935 and shortly thereafter characterized by Bowden and Pine as a nucleo-protein. Can a relatively simple nucleo-protein be an organism? We shall leave that to students of terminology to decide. It is certain, however, that this crystalline substance has the general properties of the causative agent of a transmissible disease. Similar viruses of other plant diseases have been obtained in crystalline form.

Viruses causing animal diseases are much more complex and appear to be separable into two more or less distinct groups. Those associated with poliomyelitis and encephalomyocarditis are particles of less than 40 mμ in diameter [2] and have, so far, baffled investigation of their structure. In recent months, the use of protamine

precipitation has offered promise of more effective separation of these minute viruses.

The animal viruses of larger size have, in many cases, been obtained in relatively pure form, particularly the virus of vaccinia (first purified in 1932). This virus is made up of particles of diameter between 200 and 300 mμ. It can readily be studied with the electron microscope. It has a high protein content, contains nucleic acid, carbohydrates, biotin and other constituents of the animal cell, and shows clear evidence of a complex structural framework, with diversified immunological properties.

Particularly interesting results have been obtained by E. A. Evans and others in the study of the bacteriophage, a virus of median size which attacks the bacterial cell and is particularly suitable for experimental study, since the host as well as the invading agent can be readily cultivated in pure form and since both the physiological and chemical reactions of the bacterial cell are less complex than those of the animal organism. Radioactive isotopes of phosphorus, carbon, and nitrogen have been used to identify compounds arising, respectively, from the bacterium or from the phage concerned. It appears that the process which goes on is a sort of symbiosis, in which the host cell "provides the metabolic machinery and energy for synthesizing the virus particle; the particular nature of the virus being formed is determined by specific contributions of nucleic acid from the bacteria and of nucleic acid from the virus itself."

The most fundamental contribution of these studies is to be found in the light they throw on the processes of life itself and on the complex biochemical reactions which underlie the phenomena of parasitism in its most basic form. From the immediate public health standpoint the science of virology aids—and will increasingly aid—in the practical control of communicable disease. Failure of early diagnosis is a major obstacle in the control of many of the viral and rickettsial disorders; and recent studies of epidemic typhus and of scrub typhus, based on the presence of specific antigens in urine or blood, are highly promising. Control by the use of immunizing vaccines was first empirically discovered in the case of smallpox and has been developed by laboratory studies in the case of yellow fever. In these instances the virus concerned is relatively homogeneous in make-up and produces a more or less enduring immunity. Among the rickettsial diseases, vaccination against typhus and Rocky Mountain spotted fever has proved of value. Where the virus or other causative agent is highly variable and immunity transient (as in the case of influenza) we have so far failed to secure a satisfactory vaccine.

A second important possibility of control is found in the use of specific chemotherapy. This principle has been employed for more than a decade in the treatment of lymphogranuloma venereum and trachoma, and certain substances have been found useful in all maladies induced by the psittacosis lymphogranuloma group of viruses. Interesting results have been reported on the use of polysaccharides derived from the Friedlander bacillus in checking the infection of mice with the viruses of mumps and pneumonia. Chloromycetin and aureomycin have been shown to exert a marked effect in the clinical treatment of epidemic and murine typhus and of scrub typhus. Chloromycetin has been used with good results in the treatment of Rocky Mountain spotted fever and aureomycin in the treatment of Q fever.

Finally, a fascinating vista for research is opened up by observation that the presence of two different viruses in the body may lead to a competitive struggle between them which could conceivably have practical application. Yellow fever vaccine, for example, greatly lessens the severity of an immediately subsequent

infection with dengue fever—an interference, rather than an immunizing phenomenon, since it disappears while specific immunity to yellow fever continues to be high. Horsfall points out that, "Given an agent relatively non-virulent for man, available in high concentration and adequate supply, effective control might be feasible by substituting a mild or inapparent infectious process in place of a more severe illness."

1. *Bact. Rev.* 14:193 (Sept.), 1950.
2. The mμ is one-thousandth of a micron.

A SUGGESTED ATTITUDE TOWARD POSTS AND PEOPLE

PRIOR to the Annual Meeting in October, a 2½ day institute on interpersonal staff relations was held at St. Louis—in which a highly suggestive point was made. It was embodied in the conclusion that "organization charts ought not to be used as indicating status or authority." The members of the institute considered that such charts represent primarily maps of channels of communication. Once such channels are established, everyone in the organization should be regarded as on the same human level. Each one is respected as the person who is the recognized expert on his own job, whether that job be that of the health officer who plans the total program or that of the janitor who cleans the floors.

This idea may be a somewhat startling one to the military-minded health officer, a type which, rumor has it, still exists in some outlying regions. It is, however, fully justified by modern concepts of mental hygiene. One of the basic elements in personal emotional health, and in adjustment to the interpersonal relations of a staff, is the sense of appreciated participation in a common task based on a recognition of the dignity of the individual and of the value of the job for which he or she is specially competent.

LETTER TO THE EDITOR

TO THE EDITOR:

Mass screening for tuberculosis or venereal disease is a well established public health technique. Recently screening procedures have been developed and applied in the fields of diabetes, heart disease, and cancer. As a result there is today an increasing appreciation of the public health, economic and social values which can be derived from the full use of modern screening methods for case finding in large groups of people.

The concept of multiphasic screening originated from a desire to combine several screening techniques so as to achieve economy of effort and cost, and to provide better service both to the persons screened and the community as a whole. Discussions of the concept by Chapman (*Public Health Reports* 64:1311–1314, 1949) and Breslow (*American Journal of Public Health* 40: 274–278, 1950), and the experience of the San Jose multiple screening survey (*California Medicine* 71:409–413, 1949) indicate that this technique is likely to play an increasingly important rôle in public health practice.

Nevertheless, numerous problems connected with multiple screening still remain to be solved. For example, there has been practically no discussion so far of the educational and mental health as-

pects of this technique. From the published materials on this subject it appears that such health education activity as has been carried out has been concerned essentially with community organization and promotion in relation to the survey. I have no desire to disparage these aspects, for such activities undoubtedly have important and valuable educational consequences. But if multiple screening is to have any considerable educational effect, thought must be given to more fundamental problems.

What is it that people should learn in going through the screening procedure? Should they be given information about the various diseases for which they are being screened? If this is the case, one cannot be very sanguine about the results. Various opinion polls, concerned particularly with tuberculosis information, have shown that even an educational effort of such long standing as that in tuberculosis control has not been overly successful in getting across to the public certain simple ideas concerning the disease and its attendant circumstances. The probability is that the presentation of information about several diseases at one time will not increase the enlightenment of the public in health matters.

Or should the educational effort in a multiple screening survey encourage people to seek preventive health examinations at regular intervals. If this is the objective, it must be obvious that any educational campaign undertaken among the lay public will have to go hand-in-hand with an educational effort aimed at the physicians of the community. Surveys and health campaigns are merely empty gestures unless proper follow-up is arranged in advance and made an integral part of a particular program. It is known that unless attention is paid to the matter some practitioners will fail to examine survey patients adequately.

This brings us directly to the mental health aspects of multiple screening. Such a technique operated on a mass basis involves in some degree an assembly line approach. This fact, plus the uncertainty of the outcome for the individual, undoubtedly tends to generate anxiety and tension. To this may be added the emotional upset and confusion resulting from false-positives and false-negatives. What has been done to prevent or to minimize such reactions? Or have such matters been taken into account at all in setting up multiple screening surveys? Similar considerations apply to those persons referred to physicians. It is the responsibility of those who organize the survey, and in particular the health department, to check on follow-up for the sake of the patient, the education of the physician, and the benefit of the community.

These are important problems that must be solved if multiple screening is to be developed in its full potentiality as a public health tool. Furthermore, the whole area involved in follow-up raises other questions that can only be touched upon briefly in this communication. For example, if a multiple screening survey is to be something more than just a one-night stand, if it is to be an integral part of a community health program, attention must be given to the adequacy in the community of resources for medical care, nursing, social services, and the like. In short, to make the point as sharply as possible, one might say that at present the multiple screening technique raises more questions than it answers.

This does not mean that answers cannot be found. It does mean, however, that the multiple screening technique must be employed critically, with proper analysis of the various problems involved, and with a realization that the introduction of a technological innovation of this kind may have far-reaching implications of a social nature.

GEORGE ROSEN, M.D.
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Highlights of the Midcentury White House Conference on Children and Youth

DEAN W. ROBERTS, M.D., M.P.H., F.A.P.H.A.
Representative of the American Public Health Association

IN response to invitations from President Truman, almost six thousand delegates from all parts of the country and from many foreign nations converged on the nation's capital on December 3 to participate in the Midcentury White House Conference on Children and Youth. Both in terms of the size of the group and the leadership drawn together, this White House Conference eclipsed the four conferences held in prior decades. The attendance was more than double the size of any of the previous similar conferences and necessitated the use of the largest gathering place in Washington, the National Guard Armory, for its meetings. For the first time, youths themselves were invited to participate and over four hundred of them attended, representing every state in the Union.

The custom of holding decennial White House Conferences to deal with the health and welfare needs of children was initiated by President Theodore Roosevelt in 1909, and similar conferences have been held at approximately ten year intervals irrespective of the party in power. The first conference was instrumental in the creation of the Children's Bureau in 1912 and gave momentum to the national movement to help dependent children stay in their own homes rather than in institutions.

The 1919 conference called by President Wilson formulated the first important body of child health and child welfare standards; speeded up public demand for child labor legislation; and paved the way for the Sheppard-Towner Act, which was the first federal-state cooperative program for improving state and local services for children. In 1930 the conference called by President Hoover produced the most comprehensive statement of the needs of children ever assembled in one set of documents. Its main conclusions were summarized in a Children's Charter which served for many years as a guidepost in this field. The 1940 White House Conference on Children in a Democracy was broader in scope than the others, considering for the first time economic resources, religion, housing, and recreation, as well as health, welfare, and education. It added impetus to the development of services to crippled children.

There can be no doubt but that the first four White House Conferences were major factors in shaping the health and welfare movements as related to children. What then happened in the first week of December in Washington that may influence public health programs and related fields during the coming decade?

THE PLANNING

In order to understand the meaning of the Midcentury Conference, one must realize that it was not limited to an isolated four day meeting. Actually, these four days represent only one of the major episodes in the months and years of preparation for the conference itself and the detailed arrangements for follow-up. The significance of the prepara-

tory period may in fact outweigh the importance of the conference itself, for in this two year period, the Governor of each state established a committee or commission to study and evaluate the needs of children. The state committees in turn established committees in over one thousand local communities. The state and local groups approached the problem of their youth with such interest and vigor that their accomplishments cannot be doubted, irrespective of the actions taken by the national conference. Each state committee wrote a formal report which will become part of the proceedings of the National Conference. Representatives of state and local groups were brought together in the Advisory Council on State and Local Action which participated in planning the national meeting. This Council issued a printed report on State and Local Action which was made available to delegates prior to the meeting. It is estimated that over one hundred thousand individuals participated in the work of these state and local groups.

Over 460 national organizations, including the American Public Health Association, which have particular interests in work with children participated in the conference. Their representatives were brought together in an Advisory Council on Participation of National Organizations which met several times during 1950. A large number of these organizations submitted reports to the conference reviewing their work with youth and their estimates of the unmet needs. A similar Advisory Council on Youth Participation was made up of representatives of youth organizations. The Advisory Council on Federal Government Participation was made up of representatives of federal government agencies operating substantial programs dealing with youth. Each of the four advisory councils met several times during 1950 and participated in planning the conference. Their reports were printed and distributed to each delegate in advance of the national conference. The "Chart Book" developed by the Advisory Council on Federal Government Participation is an outstanding conference document. Its seventy-five color charts depict the relationship of children to housing, economic status, disease, education, and specific social problems. It is an important source of clear, illustrative material showing statistically the problems of children and their relationship to a wide variety of environmental factors. Alert health officers will want to secure a copy of this booklet.

Another element in the preparation for the conference is the *Fact Finding Report* developed by a special technical committee. Over a thirteen month period the staff of this committee combed the nation for technical data related to the needs of children. An enormous amount of material was secured from universities, government agencies, and national organizations working with youth. The purpose was to assemble for the use of delegates all technical data which would be useful to them in pursuing their problems. A 170 page digest of this technical material was distributed to all delegates, but the full *Fact Finding Report* which will be approximately ten times as large will not appear until spring. Although an interesting document, the *Digest* published in time for use by the conference delegates was such a boiled-down version that its usefulness was impaired. It appears to be more a compendium of opinion than a book of facts.

It will be a surprise to most that the conference was financed for the most part by voluntary contributions from foundations and national organizations interested in young people. Congress made two appropriations of $75,000 each, but the total contributions of voluntary groups was considerably larger.

THE CONFERENCE

In the language of the National Committee, the Midcentury Conference, "bases its concern for children on the primacy of spiritual values, democratic practice and the dignity and worth of every individual. Accordingly, the purpose of the conference is to consider how we can develop in children the mental, emotional and spiritual qualities essential to individual happiness and responsible citizenship and what physical, economic and social conditions are deemed necessary to this development." This theme was one which presented a broad challenge not only to those in the field of public health, but also to workers in education, religion, social work, and recreation. Indeed, outstanding representatives of these disciplines and many more were brought together in the conference. In order that the needs of minority groups might be fully considered, provision was made for representation by minority racial groups in numbers roughly proportioned to their contribution to the population of the nation. In addition some two hundred foreign delegates representing thirty nations were present as observers. Those planning the conference were faced with the enormous task of developing a procedure for the conference which would provide the delegates with the necessary technical information and a real opportunity for personal participation and contribution to its work. The plan developed included major addresses by eminent authorities and a series of thirty-one panel discussions for the development of substantive material relative to the theme of the conference. At these panels delegates presented data and discussed it, but did not develop conclusions or recommendations. This was the province of the work groups which constituted the real core of the conference. There were originally thirty-five work groups, but because of size some subdivided into smaller sections. The work group most closely identified with public health was "Health Services in Relation to Healthy Personality Development," led by Dr. Hugh Leavell, Chairman of the Executive Board of the American Public Health Association. The recommendations of the work groups were presented to the conference as a whole in a plenary session at which time formal action was taken.

RECOMMENDATIONS

The recommendations of the conference were so numerous that it is not possible to give them all here. There were some, however, that will be of particular interest to health workers and may be summarized as follows:

That prompt action be taken at the national level to provide funds to supplement those of states and localities and to stimulate the early development of adequate local health service throughout the country.

That all professions dealing with children have, as an integral part of their preparation, a core of common experiences on fundamental concepts of human behavior, including the need to consider the total person as well as any specific disorder; the inter-relationship of physical, mental, social, religious, and cultural forces; the importance of interpersonal relationships; and the role of self-understanding; and emphasis on the positive recognition and production of healthy personalities and the treatment of variations; and that lay people be oriented through formal or informal education to an understanding of the importance of the foregoing concepts.

That steps be taken at national, state, and local levels to improve the facilities and increase the output of professional schools preparing persons for services to children.

That governmental and voluntary agencies work to meet the needs of wives and children of the personnel in the armed forces moving to new communities to insure their absorption into community life and the provision of adequate housing, health, educational, recreational and spiritual services to meet their needs.

That public low rent housing projects, cooperative housing for middle-income families, slum clearance and urban redevelopment be carried forward at an early date.

That new housing facilities give special attention to health, recreation, and social needs.

That youth representatives be placed on boards of various community agencies in order that they may participate in planning and operation of community programs.

That minimum standards be enforced by appropriate state agencies for day-care nursery schools, kindergarten, foster care homes, and hospital care.

That migrant and seasonal workers be given all of the health, housing, sanitation, and educational services available to other children.

That local boards of education accept full responsibility for providing adequately for the education of children with physical and mental handicaps.

That racial segregation in education be abolished.

That further federal aid be provided for education in tax-supported public schools.

That television be more widely used as a medium for mass education.

That school lunches be provided and that children unable to pay for their lunches be furnished them free.

EVALUATION

The writer approached this conference with real doubts as to the possibility of substantial accomplishments by a gathering of so large a number of individuals representing such a variance of interests and attitudes, unaccustomed to working together, and attempting to resolve their differences and reach conclusions within the brief span of four days. Nevertheless, with the conference behind us, it appears that most of these handicaps were satisfactorily overcome by careful planning and hard work by a diligent staff and a large number of interested volunteers. As would be expected, there was a certain amount of special pleading by self interested groups, but this was not a dominant feature, and the delegates themselves did not permit it to deviate them from their principal purposes. Within the limitations imposed by size, recommendations were developed in a democratic manner and there was a reasonable opportunity for any delegate with a real conviction to have his point of view considered and acted upon. The fact of having many different professional interests represented by distinguished leaders was both stimulating and deflating; stimulating because of so much constructive thinking on the problems of youth from so many different points of view deflating to those who had come to regard their particular line of work as the only important one. The fact that the conference was conducted under the shadow of one of the most critical world crises of our time forced delegates to think in terms of fundamentals rather than to waste time on superficial considerations.

It is too early to evaluate the significance of the conference in terms of its effect on the lives of children. It can be said without reservation, however, that it focused a clear spotlight on the key importance of personality development in our society. The influence of our educational, social, health, recreational, and religious institutions and practices on personality development was analyzed with great care, and important recommendations for the future were adopted. If even a small fraction of the recommendations are carried out by families, communities, private agencies, and government, this Midcentury White House Conference will take its place among the previous four as a landmark in the strengthening of our social, health, religious, and educational services for children.

Clearing House on Public Health Salary Information and Personnel Needs

STATE SALARY STUDY IN FOURTH YEAR

The report of the fourth annual study of salaries in state health departments was released late in October. Based on salaries as of August, 1950, it includes nearly 4,000 professional workers.* One new classification has been added—business management officers. These are defined as "top non-medical administrative, fiscal, and personnel officers." Another change is that medical program directors are no longer tabulated separately, but included in a group of medical personnel excluding state health officers.

In the four years the trend of salaries has been upward. Average annual salaries of state health officers and state directors of dental services have increased by about one-fourth. Non-medical program directors—engineers, laboratory directors, public health nurses, and statisticians—have increased their annual earnings by about one-fifth. Between August, 1949, and August, 1950, the salaries increased for each group.

The number of state health officers with annual salaries of $12,000 or more increased from 6 to 9 during the current year. Of the 45 reported, 22 were paid $10,000 or more. The only other groups with some members receiving $10,000 or more were medical personnel among whom about 4 per cent received this salary; laboratory directors with 6 of the 41 reported; directors of sanitary engineering with 2 of the 46 reported; and directors of dental health services with one of 34 reported.

Salaries for occupational groups other than health officers and non-medical program directors are reported in terms of salary intervals in which the median salaries appear. In these terms largest increases are reported for sanitation personnel and medical personnel and the smallest increase for sanitary engineers for the four year period. During the past year there was no change in the median salary interval of sanitation personnel and an actual decrease of $200 among sanitary engineers. This is explained in part by an increase of about 40 per cent in the number of employees in each group, thus resulting in a preponderance of salaries in the lower grades.

The report recommends "caution in interpreting comparisons of salaries between states," without also studying "organizational patterns, responsibilities of individual positions, and qualifications of incumbents." In addition, there is the caution that rising salaries are not in themselves conclusive; they must be related to other factors, chief among which are living costs and competitive salaries or earnings of persons with comparable training and experience in other activities such as the practising physician or the industrial or highway engineer, for example. Perhaps the prime value of these summary reports lies in the portrayal of broad trends, and in their influence in making appropriating bodies salary conscious.

As in earlier studies, the current study was made by the U. S. Public Health Service in coöperation with the Associa-

* As in the third annual study of 1949, salaries of staff level and graduate registered nurses are not included in the tabulations because most of these nurses are detailed for general public health nursing in local areas.

tion of State and Territorial Health Officers and the Committee on Professional Education of the American Public Health Association. Approximately 1,500 copies have been distributed to major libraries, public and voluntary health agencies, merit and civil service agencies. Further copies for limited distribution are available from the Service, Washington, D. C., or the A.P.H.A., 1790 Broadway, New York 19.

LABORATORY PERSONNEL SALARIES

Using the same material that was gathered for the fourth state salary study, a more detailed analysis has been made of professional laboratory personnel in state health departments. Salaries are analyzed for four grades of positions in addition to laboratory directors and assistant directors—a total of 1,222 workers. The salaries of professional laboratory personnel increased by approximately 7 per cent between August, 1949, and August, 1950. The job classifications used are those defined and recommended by the Committee on Qualifications and Salaries of Laboratory Personnel of the 1947 Conference of State and Provincial Public Health Laboratory Directors for which the report was prepared by the U. S. Public Health Service. Biologists, entomologists, and parasitologists are not included.

The report, the second annual one of its kind, has been distributed to laboratory directors.

TRAINING OF LABORATORY WORKERS

The Bureau of Laboratories of the Richmond, Va., Health Department has been making an experiment in the training and recruitment of laboratory workers that might be used elsewhere. In coöperation with Dr. Robert Smart, head of the Biology Department, University of Richmond, two senior university students were assigned to William A. Dorsey, Richmond Laboratory Director, to work under his supervision in the laboratory. In the spring semester of 1950 these students spent 18 hours a week rotating among the bacteriology, serology, sanitary and enteric laboratories for a total of 288 hours, for which they received four semester hours of credit.

Mr. Dorsey reports many advantages of this program; the operating laboratory has a hand in the academic as well as technical training; the sources of trained workers are expanded; the cost of the training is negligible; qualifications and capabilities of workers are known before they are hired; the university has increased placement opportunities; the students have a tryout period before graduation, and have some experience before applying for a job.

TRAINING PROGRAMS ARE ONE ANSWER

"Improving Pennsylvania's Health—A Continuing Program" in the September–October issue of the *Bulletin* of the Pennsylvania Tuberculosis and Health Society is a plea for training programs as a means of recruiting public health personnel. The author describes briefly the training programs of Maryland, New Jersey, New York, and Ohio, through which on present levels 30, 35, 120, and 40 persons respectively would be trained in 10 years. In addition, the author also illustrates graphically what should be the non-provincial and non-political basis for appointment of health administrators by citing two of New York's recent State Health Commissioners as Democrat and Republican respectively and hailing from Maryland and Minnesota. It would be a major political liability to any Governor of New York to break the professional tradition.

The paper was given at the Pittsburgh Conference of the Pennsylvania Tuberculosis and Health Society. Its author is Mrs. Philip S. Broughton, legislative chairman both of the State Health Council and the State League of Women Voters.

Credit Lines

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It is always good news when health education demonstrates its ability to be adaptable, and the New York State Department of Mental Hygiene has shown its willingness to adapt its health message to the most popular medium of the day in publishing its recent attractive comic book on mental hygiene.

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This publication should find a large audience with no difficulty at all. It is "available to recognized agencies and organizations interested in the promotion of mental health." New York State Department of Mental Hygiene, Albany.

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The Montefiore Hospital has published a report on its home care program, which is a pioneer experiment in the care of sufferers from long-term or chronic illness. It is a series of papers originally published in numerous professional journals and brought together under the title of "Home Care—Origin, Organization and Present Status of the Extra-Mural Program of Montefiore Hospital." The material covering these topics is of practical use to those with responsibility for medical and other care of long-term illness. Copies are presumably available from Montefiore Hospital, E. Gun Hill Road and Bainbridge Ave., New York.

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Those who plan similar programs would do well to emulate the historical sense of the Conference of State and Provincial Public Health Laboratory Directors.

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The *Newsletter* of the Maryland State Planning Commission provides an interesting example of an active planning agency's interests and of the large part which health problems occupy in such a planning group. The November, 1950, number is especially interesting in outlining the broad school health program of Baltimore County. Other health problems concern the State Department of Health, the care of the mentally and chronically ill, and general hospitals. Maryland State Planning Commission, 10 Equitable Bldg., Baltimore.

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UNIQUE IN ITS FIELD

The "tragic in-betweens"—children too retarded to attend public school yet not to be classified as feebleminded, have been remembered in a helpful book for parents, *Teaching the Retarded Child at Home,* by Edna Davison Osterhout, an experienced teacher of handicapped children. The book will be especially useful to parents unable to afford special schooling. It gives practical material for teaching reading, writing, spelling, numbers, and handwork, and lists needed equipment. Duke University Press, Durham, N. C., $2.50.

FROM BIOLOGICALS TO AUREOMYCIN

Because "there is widespread interest in the Lederle research and manufacturing organization," the Lederle Laboratories has distributed a handsome brochure with the title, "The Story of Lederle." If you too want to know how this vast pharmaceutical empire grew out of the farm established in 1906 by the then Health Commissioner of New York City, to manufacture diphtheria antitoxin, Lederle would probably send you the brochure. Lederle Laboratories, Pearl River, N. Y.

WORTH ACQUIRING

Long Term Illness: Chronic Disease is a general booklet in a series of seven recently published by the Division of Chronic Disease of the U. S. Public Health Service. The four lines of attack on the chronic diseases are illustrated as prevention, early case finding, adequate treatment, and restorative services. Thus health education, a higher standard of living, immunization, treatment, and sanitation are the elements that make more old folks useful longer.

The other pamphlets in the series are: *Multiple Screening, Medical Rehabilitation, Home Care, Obesity, Conservation of Hearing,* and *Conservation of Vision.* They are each imaginatively written and illustrated. Available from the Gov. Ptg. Office, Washington 25, D. C. No information on price.

Industrial Health Legislation is a compilation of state laws and regulations made by the Public Health Service because of the numerous requests for this type of information. In preparing the material, state laws enacted up to and including 1949 were examined. For each state are shown the agency to which industrial hygiene activities are delegated, the extent of rule making and enforcement powers, the control of occupational hazards, the reporting of occupational diseases, and compensation for occupational disease disability. The volume was prepared by Victoria M. Trasko of the Division of Industrial Hygiene. It is available from the Public Health Service, Washington, D. C. apparently without charge.

ANNUAL REPORTS

Good Health: The Citizen's Birthright is the 1949 annual report of the Virginia State Health Department. It is a good workmanlike report with excellent illustrative photographs. Financial figures indicate a per capita expenditure of $1.77, excluding tuberculosis sanatoria. Slightly more than $1 was expended for local health units. A map indicates 70 counties with organized health service through 34 local health districts, 12 counties with authorized appropriations but without qualified personnel available, and 18 counties without either health departments or appropriations.

Annual Report of the National Tuberculosis Association, April 1, 1949–March 31, 1950, is interesting and readable though it doesn't have a picture, a cartoon, or a "coat of many colors." It assumes maturity in its readers and gives them good paper and printing, well organized and well written material. Particularly notable is the breadth of

this agency's interests and the way it meshes its services with those of related agencies. It has, for example, a chapter on More Local Health Units, in which is emphasized the dependence of an effective community tuberculosis control program upon a well functioning health department. National Tuberculosis Association, 1790 Broadway, New York 19.

Annual Report of the Commonwealth Fund. A delightfully written annual report which gives one a glimpse into progressive thinking in medical education and a provocative discussion about health services which will stretch the imagination of inquiring minds is that of the Commonwealth Fund for 1950. The Fund reports "a stir—hardly strong enough to be called a ferment—among the agencies that provide the elements of community health care." Here is a sample of trust fund administration and progress in the medical sciences which you will not want to miss. Commonwealth Fund 41 East 57th Street, New York 22.

OHIO FIRSTS

Columbiana County was recently reported to be the first general health district in the state to appoint a full-time health educator. Each of the state's 88 counties, excluding its cities, constitutes a general health district.

The Cleveland Health Department has established a clinic to measure the working capacity of individuals who have suffered heart attacks. It is said to be the first of its kind in Ohio and the second in the United States.

BOOKS AND REPORTS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

Medical Parasitology — *By William G. Sawitz. Philadelphia: Blakiston,* 1950. 296 pp. Price, $4.25.

The aim of this manual is to present parasitology from the medical rather than the zoölogical point of view to provide the information necessary for the understanding of parasitic diseases. It contains sections on protozoa and helminths which may infect mankind, a section on medical entomology, one on selective laboratory technics, a section on treatment, and a vocabulary of technical terms. Although the book makes readily available a great deal of information on parasites and parasitic diseases, it conspicuously suffers from over-simplification. Clinical pictures are, for the most part, inadequate. The illustrations, excepting those dealing with arthropods, are poor, some are misleading and incorrect. In addition to the vocabulary, definitions of pertinent words are given in some of the different sections. The vocabulary unnecessarily defines words which are familiar to medical students and physicians, but poorly defines or omits basic parasitological terms frequently new to the reader. The reviewer cannot recommend this manual either as a textbook or as a general reference book.

DONALD L. AUGUSTINE

The Miracle of Growth — *By Arnold Sundgaard, in collaboration with the University of Illinois, Committee on Medical Sciences. Urbana: University of Illinois Press,* 1950. 73 pp. Price, $2.00, cloth; $1.25 paper.

This is a beautiful book, and saying that would be enough to recommend it to the vast majority of readers. It is based on exhibits at the Museum of Science and Industry in Chicago, opened to the public in 1947. Illustrations were prepared by Professor Thomas S. Jones and Assistant Professor Ruth B. Coleman of the Illustration Studios and the University of Illinois Press, and the text was written by Arnold Sundgaard.

Ever since the World's Fair in 1939 when Robert L. Dickinson pioneered with his birth models, museums in this country have stepped up their activities along the lines of family life education.

The book is more than an illustrated catalog. It can be used independently for the family or on the high school and college levels. The presentation is strictly a biological one, with little connection to personal or public health. It does not limit itself to the early period of life, but includes the school years up to adolescence. Arnold Gesell's patterns of development are used for general presentation.

There are minor suggestions for improvement. The chart on pages 18 and 19 is not easily understood. We also wish the very important question regarding sex determination of the expected child would not be answered in question and answer form only.

The book might have been dedicated to the memory of Eben J. Carey, who did so much toward making health exhibits acceptable to the American public.

BRUNO GEBHARD

Nursing in Prevention and Control of Tuberculosis—*By H. W. Hetherington and Fannie W. Eshleman. (3rd ed.). New York: Putnam,* 1950. 316 pp. Price, $4.50.

This textbook is written primarily for

nurse students. However, it will serve well all nurses who are concerned with preventing tuberculosis and for care and treatment of tuberculous patients and their families.

Many advances have been made in the care and treatment of the tuberculous since the two earlier editions. Some of the new material includes laboratory tests for the detection of the tubercle bacilli and the use of streptomycin and other antibiotics in the treatment of the disease. The use of BCG vaccination is in an excellent chapter on prevention of tuberculosis among nurses. This chapter should be of particular interest to nurse administrators of schools of nursing, hospitals, and public health agencies.

Nursing techniques, the isolation of patients in rooms, open wards and in general hospitals, care of clothing, linen, dishes, trays, books, and so forth, are well presented.

Public health nurses will find the information regarding the need and use of case registers, case finding, chest clinics and family health services of particular interest to them.

New material has been added to every chapter of this third edition. The coverage is excellent and nurse students and graduate nurses in all fields of nursing will gain much valuable information which should help them to a greater awareness of their responsibilities in preventing and controlling tuberculosis.

JEAN SOUTH

Psychiatry for Social Workers—*By Lawson G. Lowrey. (2nd ed.). New York: Columbia University Press,* 1950. 366 pp. Price, $4.50.

Dr. Lowrey's text is intended to orient social case workers regarding the nature of mental disorders and the practice of psychiatry. It describes the various types of mental illness and gives the important and easily recognized symptoms of each. The style is simple and as non-technical as possible, and the organization good. It will serve its purpose well, although its classroom use will require considerable supplementary material and explanation in order to prevent social work students from developing an over-simplified concept of psychiatry.

Dr. Lowrey's experience with psychiatric social workers and their training, as well as his experience as a psychiatrist, has obviously dictated the plan, content, and presentation of the book. He makes one serious mistake, apparently assuming that all social workers are case workers. His emphasis on the team approach, which characterized psychiatric work during the war, needs elaboration and emphasis.

Although this revised edition is substantially the same as the first edition with regard to purpose, content, and organization, there are a number of important changes. The statistics have been brought up to date, several important sections reworked and improved, the purpose of the text in "the promotion of harmonious, progressive collaboration between" social work and psychiatry is sharpened and emphasized and an important chapter on "The Social Worker and Treatment" added. The origin of the changes come from the use of the early text and the revision adds greatly to the value of the book for teaching purposes.

RALPH CARR FLETCHER

Directory of Biological Laboratories—*(4th ed.). Chicago: Burns Compiling and Research Organization,* 1949. 140 pp. Price, $3.00.

1. A listing of biological laboratories by cities and states describing the nature of their activities and naming their officers. A biological laboratory is defined as one professionally concerned with biological, bacteriological, serological, and biochemical investigations. State and municipal public health laboratories, hospital and other clinical laboratories,

and college laboratories, are not listed.

2. A listing of manufacturers and distributors of apparatus, materials, supplies, equipment, instruments, etc., classified by product. This section enables one to locate sources of supply of practically any item used in a laboratory. E. K. KLINE

Geriatric Nursing — *By Kathleen Newton. St. Louis: Mosby,* 1950. 420 pp. Price, $4.50.

The author sets the problem of geriatric nursing into a broad frame of reference which includes a sound view of the part which the older person should have in society. The volume is obviously the result of good planning in terms of the patient's economic, emotional, and health status. The place of general hygiene and of nutrition is well brought out.

The clinical aspects of nursing for older people are developed in 14 chapters which reveal good orientation with the community services. The book is highly recommended.

REGINALD M. ATWATER

Handbook of Bacteriology — *By Joseph W. Bigger. (6th ed.). Baltimore: Williams & Wilkins,* 1950. 547 pp. Price, $4.50.

This is the 6th edition of Bigger's book and represents an extensive revision over the previous edition published ten years earlier.

The author states that he has endeavored "to present the practical aspect of the subject, to reduce the theoretical, and keep prominently before the reader the fact that bacteria are important to the physician not in themselves, but only as the causes of disease." The author states his belief ". . . that it is better to be dogmatic, putting forward a probable theory as the correct one, rather than to leave the student confused with the claims of half a dozen rival theories. concerning the relative merits of which only the advanced worker is in a position to decide." On the whole, the author is successful in achieving his aims. That he is dogmatic is at once obvious. However, he is to be congratulated upon his refusal to accept the nomenclature for viruses which is given in the current issue of *Bergey's Manual.*

The principal adverse criticism of this revision is that the author has not shifted his emphasis sufficiently to meet the impact of sulfonamides and antibiotics on those aspects of bacteriology which are pertinent for physicians. Specifically, the reviewer is of the opinion that certain factual data on various bacteria should have been deleted and the space used for a more detailed presentation of viruses. JOHN C. SNYDER

Rainfall and Runoff—*By Edgar E. Foster. New York: Macmillan,* 1950. 487 pp. Price, $9.00.

This book covers the field of hydrology, with particular reference to those phases from which its title is derived. It points out the application of hydrological data in such fields as irrigation, public water supply, water power, drainage, etc. Hydrology is defined and its relation to other sciences indicated. The types of hydrologic data and the application of mathematics to the analysis of these data are discussed at some length.

Considerable space is devoted to a discussion of the distribution of moisture in the atmosphere and to the measurement of that moisture as humidity and as precipitation. The concepts of meteorology developed in recent years are gone into at length with particular reference to storms producing precipitation.

Much data are given with respect to the distribution of precipitation and its frequency. The chapters dealing with snow and evaporation provide valuable information on these subjects. The chapters on runoff and floods, matters in which engineers are deeply interested, comprise about one-quarter of the book

and are particularly useful. Groundwater is discussed somewhat briefly, as is proper in this type of book. The concluding chapter is an excellent resume of the application of hydrologic data and the final pages comprise an extensive bibliography.

Although the book contains a good deal of statistical mathematics as applied to hydrologic data, this fact should not discourage the non-mathematically inclined. This is a book which should be in most engineering libraries.

E. SHERMAN CHASE

Recent Advances in Chemotherapy —*By G. M. Findlay, Editor. (3rd ed. Vol. 1). Abstracts of World Medicine and Abstracts of World Surgery, Gynaecology and Obstetrics, British Medical Association, London.* 625 pp. June 14, 1950. Price, $7.50.

The rapid growth of interest in chemotherapeutic problems and of the scope and extent of our knowledge in this field is strikingly emphasized by the fact that the present edition has expanded into four volumes, where only eleven years ago the subject matter was covered in the second edition in a single volume. Needless to say, most of the material included in the earlier editions has now become well antiquated.

Except for a brief introductory paragraph which deals with the history of chemotherapy, the first volume of the present edition is devoted entirely to the chemotherapy of scabies and of helminthic and protozoal diseases, with the exception of malaria.

There are many useful tables and chemical formulas, and extensive and complete references are included with each subject. While it is a formidable task to encompass the vast and growing literature on this subject and still keep up to date on every aspect, the author has done a remarkable job in collecting and presenting the recent practical contributions. As might be expected, however, there is little opportunity for critical analysis under such conditions. Perhaps that has been left for the fourth volume which is expected to contain a survey of sulfonamides and antibiotics, with a discussion of the general principles of chemotherapy. The second volume is to be devoted entirely to malaria; the third is to deal with the chemotherapy of bacterial, viral, and rickettsial diseases.

This first volume should serve as a very useful reference work for physicians and veterinarians and for public health and laboratory workers, and any others who are concerned with the types of infestations dealt with in this volume.

MAXWELL FINLAND

Speech Problems in Children — *Edited by Wendell Johnson. New York: Grune & Stratton,* 1950. 265 pp. Price, $3.75.

This book undertakes to furnish a guide to the care and correction of children with speech problems and achieves its point in an orderly, stimulating fashion. Professor Johnson has molded an excellent basic text from the work of eleven essayists whose contributions cover various aspects of children with speech disorders. The contributors are all well known in the field, and write with clarity and authority.

Various estimates of the incidence of speech disorders among children range from 5 to 20 per cent. A reasonable working figure, including only children with problems serious enough to interfere materially with growth and development, is 5 per cent. Inasmuch as there are facilities and programs for handling only a small part of this group, this presentation of fundamental philosophies and methods is both challenging and timely.

The book was prepared by the American Speech and Hearing Association for the National Society for Crippled Children and Adults. It is a thoroughly

professional piece of work and should be known to everybody associated in public health who is concerned with the problems of children.

WILLIAM G. HARDY

Immortal Magyar: Semmelweis, Conqueror of Childbed Fever — *By Frank G. Slaughter. New York: Henry Schuman,* 1950. 211 pp. Price, $3.50.

This is a straight biography of the Hungarian obstetrician Ignaz Semmelweis who over 100 years ago first recognized the contagious nature of childbirth infections and proved how they could be prevented. His contempt for the many unscientific theories of European obstetricians who endeavored to explain away their unbelievably high maternal mortality, his search for clues to the etiology and methods of transmission, his testing and the final success of the methods of prevention he devised are a bright page in the history of public health. It is of particular interest to public health workers that the discovery, many years earlier in France, of chlorine as a disinfectant for water supplies was the key to Dr. Semmelweis's method for preventing the transmission of puerperal fever from one patient to another or from the autopsy room to the patient. Morton Thompson's life of Semmelweis, *The Cry and the Covenant,* published last year, is a more romantic account and is more enjoyable reading.

EDWIN F. DAILY

Three to Six: Your Child Starts to School—*By James L. Hymes, Jr. Public Affairs Pamphlet No. 163. New York: Public Affairs Committee.* Price, 20 cents.

This helpful pamphlet of 32 pages is just what it purports to be—"tips for parents of children starting to school." It is written in an easy, delightful style, in words and phrases heard every day in the home, on the playground, and in the street. The material is well arranged and reflects an intimate knowledge of modern psychology and education. While it does not pretend to be psychiatric, it reveals that the author has had some speaking acquaintance with that occult science! The illustrations by "Schëib" are excellent and appropriate. The format of the pamphlet measures up to the high standards set by other booklets in the Public Affairs Packet for Parents and Teachers.

RICHARD ARTHUR BOLT

Santa Claus, M.D. — *By W. W. Bauer. Indianapolis: Bobbs-Merrill,* 1950. 266 pp. Price, $2.75.

Truly a medical grass-roots book, with all the reasons against government compulsion in medical care, quite exactly and correctly as the American Medical Association would give them, but in the vernacular of the mid-west cracker-barrel chat, the service club luncheon, the give and take of patient and doctor at home, office or barbecue.

The purpose of the book is unequivocal, honest, thorough and consistent throughout from Introduction to Appendix D. Each of the sixteen chapters meets the question head-on, gives the gist of prepayment pros and cons as patient, doctor, health officer, and voluntary agency turn them over in public and private, and thrusts a question or an answer at the reader.

Our present nation-wide good fortune from the intelligent use of the medical arts and sciences, our desire for still better results and methods, our confessed failures of doctor distribution are simply told. Distaste for federal take-over of local duties and responsibilities is strongly expressed.

This is by all odds the best book on the subject of medical care insurance and the meaning of the opinions of physicians on all aspects of personal and public health that has been offered to the people of the United States.

The reviewer welcomes its courage and its conclusions and thanks the author for the manner and force of his story.

HAVEN EMERSON

Graduate Study in Health Education, Physical Education and Recreation—*A Report of the National Conference, Pere Marquette State Park, Ill., January 1950. Chicago: The Athletic Institute,* 1950. 31 pp. Price, $1.00.

This report of a national conference held for ten days in January, 1950, should be read by all those concerned with the education of specialists in these areas of school health education, physical education, and recreation. It summarizes a well planned conference of 36 delegates, 8 consultants, and 2 Canadian observers. It is in sequence with another conference held at Jackson's Mill, W. Va., in 1948 on undergraduate preparation in these fields. Fifteen sponsoring organizations include the American Public Health Association, which was represented by Dorothy Nyswander, Ph.D., and Charles C. Wilson, M.D.

Included among the purposes of this work conference were the objectives, (1) to develop principles or criteria for evaluating graduate courses in the three fields, (2) development of plans for implementing the principles, and (3) recommendations on accreditation.

It appears to this reviewer unfortunate that such a document should be hedged about by an unduly restrictive copyright that prevents quotations even in a favorable review except by express permission.

REGINALD M. ATWATER

The Rhesus Danger—Its Medical, Moral and Legal Aspects—*By R. N. C. McCurdy. London: William Heinemann—Medical Books: Ltd.,* 1950. 138 pp. Price, 5 Shillings.

The author presents a brief discussion of the clinical effects of isoimmunization by the Rh factor, with special emphasis on hemolytic disease of the fetus and new-born. Brief chapters are devoted to Mendelian heredity, the blood groups, the discovery of the Rh factor, and the therapy of hemolytic disease by transfusion with Rh-negative blood.

Of more general interest to physicians, lawyers, social and public health workers, and the intelligent lay public is the second part of the book which deals with the social, moral, and legal problems which Rh incompatible couples must face after sensitization and loss of infants has occurred. Contraception, sterilization, therapeutic abortions, adoption of children, and artificial insemination are frequently recommended to these couples, and the author's discussion of each of these measures is sufficiently comprehensive to make this book a source of valuable information to many groups of workers.

The "human" side of the Rh factor is stressed because the author who recently lost two infants from hemolytic disease, "must himself make up his mind on many of these questions." This book is highly recommended also to non-medical workers, since the second half of the book may be appreciated without a full grasp of the medical and serological details of Rh testing.

PHILIP LEVINE

The Truth about Your Eyes — *By Derrick Vail. New York: Farrar Straus,* 1950. 192 pp. Price, $2.50.

In this clearly written book the head of the Department of Ophthalmology at Northwestern University provides the layman with an understanding of how eyes function, of eye diseases and disturbances, and of what can be done about them without unnecessarily alarming the reader. There is an excellent discussion of facts and fallacies about wearing eyeglasses, bifocals, contact lenses, tinted glasses.

The value of fusion exercises in the

treatment of cross eyes and their lack of effect in changing the amount of near-sightedness are explained.

Cataracts and glaucoma are leading causes of blindness among our aging population, and it is good to find separate chapters devoted to each of these important problems. The need for thorough examination by an oculist of any person suspected of having glaucoma is stressed, together with the need for lifelong observation and treatment. In view of the conservative estimate of one case of glaucoma among each 50 persons over 40 years, this section is a "must" for those interested in adult health.

There is a relatively brief discussion of reading difficulties among school children. The chapter on hygiene of vision is sound and provocative; ten rules are given for good eye health. Rule number four, in which Dr. Vail prescribes his own secret remedy for tired eyes, can save the patent medicine addict the price of the book within a few weeks. Both the publishers and the author are to be congratulated on producing a volume of such value in interpreting this field of public health.

FRANKLIN M. FOOTE

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Babies' Best Chances—Child hygienists everywhere will, of course, want very much to know all the findings of this study, and prospective parents among the rest of us will also be interested in it because they will learn that there are "best birth weights." They are 120 gm. lower for female than male, and 160 gm. lower for non-white than white babies.

BAUMGARTNER, L., *et al.* Weight in Relation to Fetal and Newborn Mortality; Influence of Sex and Color. *Pediatrics* 6, 3:329 (Sept.), 1950.

First, There Must Be Personnel—This briefer interpretation of the big report on the nation-wide study of child health and the dearth of facilities for improving it, is something not to be missed. Packed into 40-odd pages is an inclusive discussion of the next-to-impossible task of providing adequate pediatric services.

Committee for the Improvement of Child Health. Better Medical Care for Children. *Pediatrics* 6, 3 (Pt. II), 509 (Sept.), 1950.

Pity the Poor Primipara—In England the local health authority is responsible for domiciliary midwifery services, the executive council—which manages the family doctor—looks after antenatal care, and the regional hospital board administers the specialist's services, if needed. This complicates the field of antenatal hygiene. Solutions for the problems raised presumably will come in "to be concluded."

COWAN, H. K. Team Work in the Ante-Natal Clinic. *Med. Officer* 84, 18:185 (Oct. 28), 1950.

Care and Feeding of Editors—Though this is concerned with getting news about nursing into the papers, what this experienced writer has to say applies to every other specialty in the health

field with equal pertinency. His last sentence might well be framed on your wall: "An agency without a 'run-around' wins friends in the city room."

COY, H. Nursing Is News. *Pub. Health Nursing* 42, 11:602 (Nov.), 1950.

Now, Five Years Later—Fluoridation of Grand Rapids water supply began in January, 1945. Latest examinations of the younger set of water drinkers reveals an encouraging reduction in the incidence of dental caries.

DEAN, H. T., *et al.* Studies on Mass Control of Dental Caries Through Fluoridation of Public Water Supply. *Pub. Health Rep.* 65, 43:1403 (Oct. 27), 1950.

The Sicker Sex — Another study delves into the mystery of the "female" enjoyment of greater illness rates (both acute and chronic diseases) than those of "males." Even when female genital causes are excluded, the rates continue greatly in excess. A tragicomic feature in the picture is the higher mortality rates rung-up by the seemingly tougher "male." A companion paper profitably examines illness rates by age and sex.

DOWNES, J. Causes of Illness among Males and Females (and) JACKSON, E. H. Morbidity among Males and Females at Specific Ages—Eastern Health District of Baltimore. *Milbank Mem. Fund Quart.* 28, 4:407 (Oct.), 1950.

One Worry Relieved—If you have been disturbed by scare head warnings against eating liver, eggs, etc., this quote will prove reassuring: "From the evidence submitted it is believed that not only is a low cholesterol diet of questionable value in the treatment of coronary artery disease, but there is complete independence of the level of serum cholesterol and the amount of cholesterol ingested within the normal dietary variations."

GERTLER, M. M., GARN, S. M., AND WHITE, P. D. Diet, Serum Cholesterol and Coronary Artery Disease. *Circulation* 2, 5:696 (Nov.), 1950.

Genus Homo—It is affirmed here that many sub-standard families, after a number of years of living in good "council" housing, are found as sub-standard as ever—all of which lends little support to the theorem that bad housing is the root of social evils.

HOEY, R. A. Social Problem Families. *Med. Officer* 84, 16:165 (Oct. 14), 1950.

Not By Bread Alone—Chances are good that any reader of these rambling paragraphs will find it profitable to ease up from his concentration upon his particular little job long enough to expose his mind to so impractical a question as that in the title below. If you hunt out this paper, you'll not find a firm-and-fast answer, but you will surely have had some speculative fun.

EISELEY, L. C. Is Man Here To Stay? *Scient. Am.* 138, 5:52 (Nov.), 1950.

Hard Sledding — Here and there groups of country people are trying in their own ways to provide for local health and medical needs. Most of the 101 coöperatives reported upon are still struggling along, but more than a third have given up the effort. Where they succeed, their success seems due to the active participation of just the right local people.

JOHNSTON, H. L. Rural Health Cooperatives. *Pub. Health Rep.* 65, 43:1383 (Oct. 27), 1950.

Nothing Hit-or-Miss Here—From this solidly controlled tuberculosis study the words that will probably prove most readily remembered are these: "The consistent superiority of the streptomycin group on all measures, clinical, bacteriological, and radiological, and at all points of time, constitutes definitive evidence of the usefulness of streptomycin when added to other treatment of tuberculosis."

LONG, E. R., AND FERREBEE, S. H. A Controlled Investigation of Streptomycin Treatment of Pulmonary Tuberculosis. *Pub. Health Rep.* 65, 44:1421 (Nov. 3), 1950.

Quote-of-Month: Canadian Division — "The fact is that both these forms of health insurance (voluntary and compulsory) have a real contribution to make to human welfare and that they are more alike than they are different. It all depends on what people want."

MOTT, F. D. Prepaid Medical Care under Government Auspices in Saskatchewan. *Canad. J. Pub. Health* 41, 10:403 (Oct.), 1950.

"He Had A Stomach Ache" — On occasion you've been reminded that items here are supposed to be limited to papers that are of presumed interest to health workers and that appear in scientific periodicals. Well, once in a while comes a sort of Sabbatical leave of the rules. This time it is *The New Yorker*. If you would enjoy a brilliant specimen of epidemiology made readable, here it is.

ROUECHE, B. A Pig from Jersey. *The New Yorker Magazine* 26, 39:140 (Nov. 18), 1950.

Pointed Words and Wise—Physicians are plainly told that they should participate in the management of voluntary health agencies, but that they cannot expect to rule them. Such enterprises are influential only to the extent that representatives of the people themselves carry out their own decisions.

SHEPARD, W. P. The American Heart Association as a National Voluntary Public Health Agency. *Circulation* 2, 5:736 (Nov.), 1950.

When People Are Involved — Nine factors that make for successful community organization are set down here. The accent is on organization for mental health but the same factors apply to any other area of public hygiene.

STEVENSON, G. S. Dynamic Consideration in Community Functions. *Ment. Hyg.* 34, 4:531 (Oct.), 1950.

Public Health in Foreign Periodicals

GEORGE ROSEN, M.D., PH.D., F.A.P.H.A.

NUTRITION AND RATIONING IN HELSINKI DURING WORLD WAR II AND THE POST-WAR PERIOD

Erkkilä [1] discusses nutrition in Helsinki during the period 1941–1945, as well as changes in food prices during 1942–1948. He points out that the official ration for persons not engaged in manual labor was inadequate, especially in the latter part of 1945. Taking into account the climate and lack of fuel in wartime, it was assumed that such persons needed a total of 3,000 calories per day. The official ration did not provide enough protein, but many persons were able to satisfy their needs through foodstuffs offered in the free market. As regards minerals, there was a calcium deficiency during the entire period covered by this study. By January, 1948, the home diet was able to cover this dietary defect. Throughout the entire rationing period, the most considerable dietary deficit was in the vitamin A requirement. This was due chiefly to a greatly diminished supply of butter, milk, eggs, liver, and other foods containing vitamin A. There were also deficiencies of vitamin B_2, nicotinic acid, and vitamin D.

Throughout the war, food prices were held down to a large extent, but with the termination of hostilities prices had to be raised. When eggs and fish were re-

leased from rationing, their prices rose so that they exceeded the price levels of 1937 some 40 to 50 times.

INFECTIOUS HEPATITIS FROM A HYGIENIC VIEWPOINT

During World War II extensive epidemics of infectious hepatitis occurred in various parts of Norway.[2] A statistical analysis of reported cases for the period 1942–1948 shows that these outbreaks were more widespread in rural than urban areas, particularly in 1942–1943. From 1947 on, however, more cases were reported from urban, than from rural districts. There were 88,664 reported cases in all, with 471 deaths. Most of the fatalities occurred in old and middle-aged people. The mortality increased from 1942 on. In that year, there were 5 deaths per 1,000 reported cases, while in 1947 there were 25 per 1,000. In the urban districts particularly, the disease seemed to become more serious from year to year. It has been suggested that this may have been due to an increase in the cases of homologous serum jaundice.

TEACHING HYGIENE TO MEDICAL STUDENTS IN FINLAND

Lojander[3] discusses briefly the teaching of hygiene to medical students at the University of Helsinki during the period 1902–1936. He then gives a more detailed description of the reorganization of this aspect of the medical curriculum. The course in hygiene takes 3 months. There are 4 hours of lectures a week, and 6 hours devoted to practical assignments. Two weeks of the course are devoted to basic laboratory work, and another 2 weeks to disinfection work which is compulsory. The total time allotted to practical work is about 54 hours. In addition to the required work mentioned above, the student may also elect to do some supplementary work. This may be either in the laboratory field or in connection with some social aspect of health. Usually two students work together on such an assignment, and a written report on the work is handed in at the end of the term. During the course, these assignments are discussed by the participants. In addition, there is an elective supplementary course of practical work. In this course, the student devotes 18 hours to the local board of hygiene, 18 hours to the office of the district physician, 8 hours to school hygiene, 4 hours to an abattoir, 4 to factory inspection, and 2 hours to mental health. The basic aim of the entire course is to show clearly the relation to daily life of the instruction given to the students.

DISINFECTION THROUGH AEROSOLS

Arvidson presents the results of laboratory experiments with propylene glycol, triethylene glycol, and benzalconiumchloride as aerosols.[4] Various test bacteria were employed. The best bactericidal effect on alpha hemolytic streptococci was obtained with triethylene glycol. It reduced the number of bacteria by more than 90 per cent in a few minutes with a concentration of 0.01 mg. per liter of air. This effect was demonstrable for about one hour. Other bacteria were tested; hemolytic streptococci were most easily affected, while bacteria of the subtilis group were most resistant. When the relative humidity of the air exceeded 70 per cent the bactericidal effect of the glycols was reduced.

DISEASES OF THE CIRCULATORY SYSTEM AS A PUBLIC HEALTH PROBLEM

Strøm and Jensen[5] point out that with an increase in the older age groups of the population, chronic diseases of the circulatory system have come to be an important public health problem. As there is evidence to show that these diseases are connected with diet, and in particular with the consumption of food containing cholesterol, the authors un-

dertook to investigate the behavior of diseases of the circulatory system during the German occupation of Norway, since the dietary status of the population was radically changed during this period.

From 1927 to 1940 there was a constant increase in mortality from diseases of the circulatory system in Norway. After 1941 there was a drop in mortality which reached its lowest point in 1943–1944. Since the end of the war, however, mortality has again risen toward its earlier level. Both the fall and rise of mortality affected both sexes. The decrease in mortality coincided with the change to a more restricted diet. The average caloric value of the diet fell from 3,470 calories to 2,850. The reduction in calories was effected chiefly in terms of the fat content of the diet. A marked correlation was found between the age-corrected mortality and the consumption of fat in milk, cream, butter, cheese, and eggs. When all the diseases of the circulatory system were considered, the drop in mortality was as great in the rural as in the urban areas. However, when the cases of arteriosclerosis and myocarditis were considered separately, the decrease in mortality was found to be much greater for the urban areas. During the war, the authors observed a fall in blood pressure (systolic and diastolic) in workmen engaged in three industrial concerns in Oslo. Since 1945 this fall has been followed by a rise of blood pressure.

The authors feel that their study has not provided positive and definitive proof of the dietary cause of circulatory disease. Nevertheless, they point out that their data tend to support this hypothesis and that more should be done to combat obesity and diets rich in fats.

NOISE AND OCCUPATIONAL DEAFNESS IN INDUSTRY

A study was made of 179 workers in a noisy occupation.[6] Of these, 155 were miners, 15 platers, and 9 machine house workers. In the group of miners, 51 were examined in 1943 and again in 1947. It was found that 41 per cent of the group of workers had ringing of the ears in connection with their work, 11 per cent complained of constant ringing of the ears, and 36 per cent felt that their hearing was bad. Examination revealed that almost half the workers had a definite diminution of hearing ability after the first 5 years of work in noise, and that no one has normal hearing after 20 years. Measures to decrease and prevent noise are necessary, and systematic examinations of the workers are necessary. Finally, an educational program is necessary to obtain the cooperation of the workers.

HYGIENIC PROBLEMS IN THE INDUSTRIAL USE OF PHENYL MERCURIC COMPOUNDS

Lundgren and Swensson[2] report on an industrial hygiene program in connection with the use of phenyl mercuric compound at three Swedish paper mills. The exposed working population was about 100 employees. The program comprises three points; (1) toxicity tests on mice; (2) control through measurement of the mercury level in urine; (3) clinical control including blood counts and liver function studies. The control program was planned on the basis of previous experience in controlling hazards in the manufacture and handling of alkyl mercury compounds. In order to obtain a clear picture of toxicity tests on mice were made to determine the LD_{50}. Analyses of the air showed small amount of mercury (up to 0.07 mg./m^3) at only a few locations in the plants. Urine analyses were employed as a good method of checking the effectiveness of engineering control.

TUBERCULIN TESTING AND MASS MINIATURE RADIOGRAPHY OF THE POPULATION OF A SMALL TOWN

The population of the town of Pors-

grunn was examined for tuberculosis.[8] Of 6,028 persons over 15, 63.3 per cent were tuberculin-positive (Pirquet test), while 36.4 per cent were negative. Doubtful reactions were obtained in 6.2 per cent. In the age group 15 to 19, 27.5 per cent were tuberculin-positive, and 80.6 per cent in the age group 45 to 49 years.

BCG vaccination was performed in 88.5 per cent of nonreactors between the ages of 15 and 40 years. Immunization was performed by the intracutaneous method.

Photofluoroscopic examination of 6,663 individuals revealed 4 cases of active tuberculosis and 4 cases of old tuberculosis. There were 15 further cases with possible pulmonary involvement. It was felt that these were apparently healthy but potentially infected, and probably constituted a group from which active cases derive, so that detection of such cases is vitally important.

A DIPHTHERIA EPIDEMIC AMONG THE PERSONNEL OF A HOSPITAL

Levy[9] describes a diphtheria epidemic among the personnel of a Norwegian municipal hospital despite active immunization of a majority of the staff. The epidemic is ascribed to non-pasteurized milk from the hospital farm, where the dairyman and his wife were found to be carriers. Some patients and nurses received pasteurized milk and were not infected. Altogether, 50 persons with clinical symptoms and 24 carriers were isolated. Of these, 32 and 17 respectively had previously been immunized. Immunized persons showed a milder course. There were few serious cases and no fatalities. No secondary spread of the infection occurred.

THE ROLE OF INSECTS IN THE SPREAD OF INFANT DIARRHEA IN FINLAND[10]

Yoppö and his coworkers undertook to investigate the effect of destroying insects on the spread of infant diarrhea in two Finnish towns of equal size and similar type. In one town DDT powder was used to destroy flies, while this procedure was not carried out in the other town. Where flies were destroyed the rate for infantile diarrhea was 11.5 per cent and where nothing was done it was 13.9 per cent. The authors feel that flies play little part in the causation of diarrhea in infants and attribute it rather to the handling of the dairy milk with which these children were fed. The incidence of diarrhea was found to be less among infants fed on human milk or powdered milk.

VENEREAL DISEASES IN DENMARK[11]

The control of the venereal diseases in the Scandinavian countries has been a matter of considerable attention in other parts of the world. Readers of the *Journal* will therefore be interested in a recent booklet, issued in 1949, by the Danish National Health Service describing the control of venereal diseases in Denmark. This publication discusses the general population and social background, the incidence of venereal disease, the training of physicians, finances, laboratory diagnosis, reporting of patients, and many other subjects.

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2. Haakon Natvig. Infektiøs hepatitt fra hygienisk synspunkt. *Nordisk Hygienisk Tidskrift* 1950, Häfte 3, pp. 53–84.
3. W. Lojander. Om undervisningen i hygien för medicine kandidater och dess utveckling i Finland. *Nordisk Hygienisk Tidskrift* 1950, Häfte 3, pp. 85–95.
4. Mai Arvidson. Luft desinfektion med aerosoler. *Nordisk Hygienisk Tidskrift* 1950, Häfte 4, pp. 97–108.
5. Axel Strøm and R. A. Jensen. Kretsløpslidelsene som hygiene problem. *Nordisk Hygienisk Tidskrift* 1950, Häfte 5, pp. 123–151.
6. H. F. Fabritius, H. Stenwig and E. Thiis-Evensen. Larm og hørselskader i en industriell bedrift. *Nordisk Hygienisk Tidskrift* 1950, Häfte 6, pp. 157–178.
7. Karl-David Lundgren and Ake Swensson. Om fenylkvicksilverföreningar som yrkeshygieniskt problem. *Nordisk Hygienisk Tidskrift* 1950, Häfte 7–8, pp. 207–219.
8. Einar Gisholt. Resultatet av skjermbilledfotograf-

ering og tuberkulinundersøkelse i en mindre by. *Nordisk Hygienisk Tidskrift* 1950, Häfte 7–8, pp. 234–245.
9. C. W. D. Levy. Difteriepidemi blandt sykeusbetjening. *Nordisk Hygienisk Tidskrift* 1950, Häfte 9, pp. 268–274.
10. Arvo Yoppö, *et al.* The Role of Insects in the Spreading of Infantile Diarrhea in Finland. *Annales Medicinae Internae Fenniae* 39:149–150, 1950.
11. *The Combating of Venereal Diseases in Denmark*, published by the National Health Service, Second edition, Copenhagen, 1949, 44 pp.

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

ANTIPYRINE. Leon A. Greenberg. New Haven: Hillhouse, 1950. 135 pp. Price, $4.00.

BACTERIAL POLYSACCHARIDES. Martin Burger. Springfield, Ill.: Thomas, 1950. 269 pp. Price, $6.00.

BASIC DOCUMENTS OF THE PAN AMERICAN SANITARY ORGANIZATION. Washington: Pan American Sanitary Bureau, 1950. 67 pp.

BIOPHYSICS AND BIOPHYSICAL CHEMISTRY. Vol. I. Edited by J. T. Randall and J. A. V. Butler. New York: Academic Press, 1950. 279 pp. Price $6.80.

BIRTH OF A CHILD. Grantly Dick Read. New York: Vanguard, 1950. 114 pp. Price, $1.50.

BURDEN OF DISEASES IN THE UNITED STATES. Alfred E. Cohn and Claire Lingg. New York: Oxford University Press, 1950. 129 pp. plus Color-Chart slip case. Price, $10.00.

CHILD PSYCHIATRY IN THE COMMUNITY. Harold A. Greenberg. New York: Putnam's, 1950. 296 pp. Price, $3.50.

CLEAN WATER IS EVERYBODY'S BUSINESS. Public Health Service Publication No. 11. Washington: Gov. Ptg. Office, 1950. 26 pp. Price, $.20.

COMMUNITY AND PUBLIC HEALTH NURSING. Edith Wensley. New York: Macmillan, 1950. 250 pp. Price, $3.50.

CURRENT TRENDS IN THE RELATION OF PSYCHOLOGY TO MEDICINE. Dennis, Felix, Jacobsen, et al. Pittsburgh, Pa.: University of Pittsburgh Press, 1950. 189 pp. Price, $3.75.

DIRECTORY OF COMMUNITY HEALTH PLANNING COUNCILS. New York: National Health Council, 1950. 98 pp. Price, $1.00.

ELECTROPHORESIS IN PHYSIOLOGY. Lena A. Lewis. Springfield, Ill.: Thomas, 1950. 66 pp. Price, $1.85.

ELEMENTS OF PSYCHOANALYSIS. Edited by Hans Herma and Gertrud M. Kurth. Cleveland: World Publishing, 1950. 333 pp. Price, $3.00.

EVALUATION IN PHYSICAL EDUCATION. M. Gladys Scott and Esther French. St. Louis: Mosby, 1950. 348 pp. Price, $4.00.

GENERAL PSYCHOTHERAPY. D. Ewen Cameron. New York: Grune & Stratton, 1950. 304 pp. Price, $5.00.

HYPNOSIS: THEORY, PRACTICE AND APPLICATION. Raphael H. Rhodes. New York: Citadel, 1950. 176 pp. Price, $3.00.

INDUSTRIAL AND SAFETY PROBLEMS OF NUCLEAR TECHNOLOGY. Edited by Morris H. Shamos and Sidney G. Roth. New York: Harper, 1950. 368 pp. Price, $4.00.

INTERNATIONAL SURVEY OF SOCIAL SECURITY. Washington: International Labor Office, 1950. 236 pp. Price, $1.50.

LABOUR - MANAGEMENT CO - OPERATION IN FRANCE. Washington: International Labor Office, 1950. 237 pp. Price, $1.25.

MAN AND HIS ENVIRONMENT. A. Leslie Banks. New York: Cambridge University Press, 1950. 16 pp. Price, $.35.

MANSON'S TROPICAL DISEASES (13 ed.). Edited by Sir Philip H. Manson-Bahr. Baltimore: Williams & Wilkins, 1950. 1136 pp. Price, $9.00.

MEDICAL CARE FOR SEAMEN. Robert Straus. New Haven: Yale University Press, 1950. 165 pp. Price, $3.75.

MODERN ABNORMAL PSYCHOLOGY. A Symposium edited by W. H. Mikesell. New York: Philosophical Library, 1950. 880 pp. Price, $10.00.

MODERNIZATION PROGRAMS IN RELATION TO HUMAN RESOURCES AND POPULATION PROBLEMS. New York: Milbank Memorial Fund, 1950. 153 pp. Price, $.50.

NATURAL CHILDBIRTH. Frederick W. Goodrich. New York: Prentice-Hall, 1950. 176 pp. Price, $2.95.

NEEDS OF CHILDREN OF PUERTO RICO. Report of the Interdepartmental Committee on Children and Youth. Washington: Children's Bureau, 1950. 22 pp.

NURSING SCHOOLS AT THE MID-CENTURY. Margaret West and Christy Hawkins. New York: National Committee for the Improvement of Nursing Services, 1950.

OUTLINE OF SCIENTIFIC CRIMINOLOGY. Nigel Morland. New York: Philosophical Library, 1950. 284 pp. Price, $4.75.

PHILANTHROPIC GIVING. F. Emerson Andrews. New York: Russell Sage Foundation, 1950. 318 pp. Price, $3.00.

PHYSICIAN TO THE WORLD. The Life of General William C. Gorgas. John M. Gibson. Durham, N. C.: Duke University Press, 1950. 315 pp. Price, $4.50.

PLANNING THE OLDER YEARS. Edited by Wilma Donahue and Clark Tibbitts. Ann Arbor, Mich.: University of Michigan Press, 1950. 248 pp. Price, $2.50.

PRACTICAL FOOD INSPECTION. Vol. I. Meat Inspection. Vol. II. Fish, Poultry and Other Foods. C. R. A. Martin. London, Eng.: H. K. Lewis, 1950. Vol. I. 322 pp. 138 illus. Vol. II. 308 pp. 57 illus. Price, 18s net per volume.

PRACTICAL NURSING CURRICULUM. Washington, D.C.: U. S. Gov. Ptg. Office, 1950. 140 pp. Price, $.65 (no stamps).

PRINCIPLES AND TECHNIQUES IN SOCIAL CASEWORK. Cora Kasius, Editor. New York: Family Service Association of America, 1950. 433 pp. Price, $4.50.

PROBLEMS OF SOCIAL POLICY. Richard M. Titmuss. New York: British Information Services, 1950. 596 pp. Price, $5.75.

PUBLIC HEALTH AND WELFARE IN JAPAN. Annual Summary, 1949. Vols. I and II. Supreme Commander for the Allied Powers, Public Health and Welfare Section, APO 500. Vol. I. 145 pp. Vol. II. 113 Tables.

PUBLIC HEALTH ENGINEERING. Vol. II. Earle B. Phelps, New York: Wiley, 1950. 213 pp. Price, $4.00.

SEX EDUCATION AS HUMAN RELATIONS. Lester A. Kirkendall. New York: Inor Publishing, 1950. 351 pp. Price, $4.50.

SOCIAL AND BIOLOGICAL CHALLENGE OF OUR AGING POPULATION. Proceedings of the Eastern States Health Education Conference, March 31–April 1, 1949. New York: Columbia University Press, 1950. 183 pp. Price, $2.75.

SOCIAL WELFARE FORUM, 1950. Official Proceedings of the National Conference of Social Work. New York: Columbia University Press, 1950. 344 pp. Price, $4.75.

SOCIAL WORK IN THE CURRENT SCENE 1950. Selected Papers, 77th Annual Meeting National Conference of Social Work, Atlantic City, N. J., April 23–28, 1950. New York: Columbia University Press, 1950. 384 pp. Price, $4.75.

SOURCES OF LOVE AND FEAR. M. Bevan-Brown. New York: Vanguard Press, 1950. 153 pp. Price, $2.50.

SWIMMING AND DIVING. David A. Armbruster and Laurence E. Morehouse (2nd ed.) St. Louis: Mosby, 1950. 302 pp. Price, $4.00.

STUDY OF DENTAL PUBLIC HEALTH SERVICES IN NEW ZEALAND. Allen O. Gruebbel. Chicago: American Dental Assn., 1950. 59 pp.

TABLES OF BINOMIAL PROBABILITY DISTRIBUTION. National Bureau of Standards. Applied Mathematics Series 6. Washington: U. S. Gov. Ptg. Office, 1950. 387 pp. Price, $2.50.

TWENTIETH CENTURY MENTAL HYGIENE. Maurice J. Shore, et al. New York: Social Sciences, 1950. 444 pp. Price, $6.00.

TYPHUS FEVER IN CALIFORNIA 1916–1948. San Francisco, Calif.: State Board of Health, 1950. 99 pp.

WHEN MINDS GO WRONG. John Maurice Grimes. Chicago: Published and Distributed by the author, 5209 S. Harper Avenue. 237 pp. Price, $5.00.

Motion Picture Film Reviews

HOMER N. CALVER, *Film Review Editor*

Laboratory Diagnosis of Diphtheria. A series of four films, with self-explanatory sub-titles. All black and white, with sound. Produced by the Communicable Disease Center of the Public Health Service, 605 Volunteer Building, Atlanta 3, Ga. For free loan upon request. Give date or dates of showings.

Part 1—Microscopic Study and Isolation of *C Diphtheriae*.....	13 minutes
Part 2—Determination of Types of *C Diphtheriae*.....	11 minutes
Part 3—Testing for Virulence in Animals	13 minutes
Part 4—The "In Vitro" Virulence Test for *C Diphtheriae*.....	12 minutes

All laboratories doing work with the *C. diphtheriae* will profit by spending some time in seeing these films. By means of the lecture-demonstration method, the films teach an excellent technique (although one might expect more flaming of pipettes or loops). Step by step the method for the inoculation of the media and the final identification of the diphtheria bacillus, is demonstrated.

The technique for determining the types of *C. diphtheriae* is explained in detail, without emphasizing the reasons for wanting to type these organisms.

The third film, "Testing for Virulence in Animals," gives a detailed account, by means of excellent photography, of the use of the intradermal method in rabbits, as well as the guinea pig and chick inoculation techniques. While there might be some differences of opinion as to the superiority of one method over another, there is no question but that the film demonstrates clearly how to test for virulence in these animals.

The fourth film in this series, dealing with the *in vitro* virulence test for diphtheria, is a good demonstration of this recent development. It deals with the method of preparing the required rabbit serum, as well as with the *in vitro* method of testing for the virulence of the diphtheria bacillus. However, it is suggested, that in order for the technician to obtain the maximum benefit from this film, some knowledge of the subject would be helpful.

These films do not discuss some of the problems of a public health laboratory, such as the receiving and the reporting of specimens, nor would some of the laboratory methods demonstrated be suitable for a large routine public health laboratory. However, such laboratories can readily use these films as a basis for a group conference dealing with the laboratory diagnosis of diphtheria.

DANIEL WIDELOCK

RECENT MOTION PICTURE RELEASES

(All 16 mm, black and white, with sound, unless indicated otherwise)

Community Fly Control—Basic Sanitation, Space Spraying. Two films, running 7 minutes each. Produced and distributed by Communicable Disease Center of the Public Health Service, Atlanta, Ga. Available for free loan.

Control Your Emotions—Psychological principles for emotional health explained simply. 12 minutes. Produced by Coronet Films, Coronet Building, Chicago 1, Ill. Purchase price $56.25 for black & white; $112.50 for color.

DDT in the Control of Household Insects—Shows techniques for using DDT. 19 minutes. Made by the Army and recently released for general showing through Castle Films, 1445 Park Avenue, New York 29. Purchase price $23.54. Rental free.

I. V. Stat.—Techniques for giving intravenous infusions. 20 minutes. Produced for Cutter Laboratories, 4th & Parker Street, Berkeley, Calif. Color. Purchase price $250. Rental free.

Let's Have Fewer Colds—Simple health practices and precautions. 10 minutes. Produced by Coronet Films, Coronet Building, Chicago 1, Ill. Purchase price $45 for black & white; $90 for color.

Miracle of Life. Moving X-rays — Two of the "John Kieran Kaleidoscope" films produced and distributed by Alamanac Films, 516 Fifth Avenue, New York 18. Each runs 11 minutes. The first picture uses microscopic photography to show cell development and division, egg growth, insemination and life forms. The second picture shows action inside a human anatomy by means of motion picture x-rays. Purchase price $45 each. Also available for rental from film libraries.

Teeth Are To Keep—Essentials of dental care for children. 10 minutes. Color film produced by National Film Board of Canada and distributed in the United States by Encyclopaedia Britannica Films, Wilmette, Ill. Purchase price $100 less 10 per cent discount. Also available for rental from film libraries.

Today and Tomorrow—The plight of children with muscular dystrophy. 5 minutes. Color. Produced by Films for Industry for the Muscular Dystrophy Association. For unlimited free loan, write to Roy Bernard Company, 14 East 62 Street, New York 21.

ASSOCIATION NEWS

THE STRUCTURE, OPERATIONS AND GOALS OF THE AMERICAN PUBLIC HEALTH ASSOCIATION

Dr. Hugh R. Leavell, Professor of Public Health Practice at the Harvard School of Public Health, Boston, Mass., and Chairman of the Executive Board of the American Public Health Association, has announced that a review of basic Association policy has been conducted in recent months under the above title. The Executive Board has taken counsel with skilled observers from several fields, among them Raymond Rich Associates of New York City.

In order that this material may be adequately reviewed for consideration of the Governing Council, the Executive Board has set up a special committee for this purpose which is continuing the study of the report in an effort to define the goals and to work out suitable policies for this professional society of public health workers in North America.

The Committee to review these policies of the Association consists of Lowell J. Reed, Ph.D., Vice-President, The Johns Hopkins University, Baltimore, Md., and immediate past President of the American Public Health Association, with the following members: Eugene L. Bishop, M.D., Director for Health and Safety, Tennessee Valley Authority, Chattanooga, Tenn., past President of the American Public Health Association and formerly Chairman of the Committee on Administrative Practice, A.P.H.A.; Pearl L. Kendrick, D.Sc., Associate Director of Laboratories in charge of the Western Division, State Department of Health, Grand Rapids, Mich., formerly Chairman of the Laboratory Section, A.P.H.A., and formerly member of the Executive Board, A.P.H.A.; Joseph G. Molner, M.D., Commissioner of Health, Detroit, Mich., former Secretary and Chairman of the Health Officers Section, A.P.H.A.; and Thomas Parran, M.D., Dean of the Graduate School of Public Health, University of Pittsburgh, Pittsburgh, Pa., past President, A.P.H.A.

Among the chapter headings of the report now before Dr. Reed's Committee are the following:

1. The central problem as it affects
   a. Earmarked grants
   b. General contributions
   c. Membership dues
2. The structural flaws
   a. The problem of democracy
   b. The problem of Branches and Affiliated Societies
   c. The problem of Section organization
3. Functioning of the Association
   a. The Governing Council
   b. The Executive Board
   c. The Executive Secretaryship
4. The problem of membership promotion
5. New goals for the A.P.H.A.
   a. Increased remuneration for public health workers
   b. Prestige for public health workers through public knowledge
   c. Public leadership
   d. Recruitment

Dr. Leavell indicated that it was anticipated that the report by Dr. Reed's Committee would be ready early in 1951 for review by the Executive Board and later consideration by the Governing Council.

STATEMENT OF ENGINEERING SECTION UNITY

The Engineering Section Council, in 1946, outlined the area of interest of the Engineering Section (*A.J.P.H.* p. 112, 1947). The Section has been following the 1946 statement to make the Section the home for all individuals whose primary interest is the field of environmental sanitation. An elaboration of the policy concerning the interests of the Section was adopted during the Annual Meeting in St. Louis. It was prepared originally by the Policy Advisory Committee of the Section and later adopted by the Section. It states:

1. It is recognized that persons differing in education, experience, and responsibility are employed in an intimate working relationship in official health agencies and that such a relationship should be paralleled in the activities of the Engineering Section of the American Public Health Association.

2. The Engineering Section is, by reason of the Constitution and By-laws governing it, inclusive of all interests in the field of environmental sanitation and of the persons engaged therein.

3. To the extent that its national character and organizational limitations permit, the activities and programs of the Engineering Section strive to reflect and express these broad interests.

4. The Engineering Section recognizes that it cannot adequately provide means for activities and interests which are essentially regional or local in character, and that a number of other organizations are essential in meeting such needs.

5. The Engineering Section further recognizes that it cannot fully satisfy the requirements for expression of specialized interests and activities, and that other organizations necessarily parallel, intensify, and support the multiple interests of the Section.

6. Since the Engineering Section represents only one of many organized interests within the American Public Health Association, it is highly desirable that all those employed in sanitation work, whether administrative, supervisory, or operational, join in the Section effort to maintain and advance the common interest, which is the control and modification of the environment to the benefit of the public health, comfort, and safety.

7. Within the Engineering Section there is no room for disunity predicated on the advancement of one group to the disadvantage of another group, since neither engineers, sanitarians, nor other specialists can advance in effectiveness and standing without mutual recognition of their interdependence.

8. The Engineering Section reaffirms its previously stated policy and objective of serving as the focus of all environmental sanitation interests, and welcomes to membership all those who are interested in sanitation, and to fellowship all those eligible under the Constitution and By-laws of the American Public Health Association.

Implementation of Item 8 was undertaken during the 1950 Annual Meeting. The member of the Section Council elected for a term ending 1955 is Walter S. Mangold, a non-engineer. In 1949 Justin M. Andrews, ScD., was elected to the Section Council with term expiring in 1954. Dr. Andrews likewise is not an engineer.

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

Reuben A. Barker, M.D., 211 E. Broadway, Alton, Ill., Clinician, Venereal Disease Division, State Dept. of Public Health

George W. Drexler, M.D., 117 West 5th St., Blue Earth, Minn., Blue Earth Medical Center

Fred W. Harb, M.D., M.P.H., Box 3027, Birmingham, Ala., Senior Surgeon, Mid-South Medical Center, U.S.P.H.S.

Herman Kleinman, M.D., Red Lake, Minn., Senior Physician, U.S. Indian Service

Richard E. Lewis, M.D., 226 Stanford Ave., Berkeley 8, Calif., Graduate Student, Univ. of California School of Public Health

Alexander C. Macdonald, M.D., 130 Central Ave., Valley City, N. D., Health Officer

Samuel B. Marks, M.D., 212 North Upper St., Lexington, Ky., Director of Health, City of Lexington and Fayette County

M. E. Marritt, M.D., Box 1592, Dawson Creek, B. C., Canada, Health Unit Director

George Moore, M.D., 5974 Lohr Rd., Ann Arbor, Mich., Student, School of Public Health, Univ. of Michigan

David C. Prickett, M.D., Box 158, Lumberport, W. Va., Health Officer, District No. 4

C. L. Roholt, M.D., Waverly, Minn., Health Officer

Bernard W. Rosenburgh, M.D., M.P.H., Pine Ridge, S. D., Medical Officer in charge, U. S. Indian Service

Capt. Clifton A. Young, M.C., U. S. Naval Hospital, Camp Lejeune, N. C., Exec. Officer

H. B. L. Zeman, M.D., D.P.H., South Okanagan Health Unit, 451 Strathcona Ave., Kelowna, B. C., Canada, Director

Laboratory Section

Rouelle H. Allen, M.D., Ph.D., 74 Cameron Ave., Ottawa, Ont., Canada, Medical Officer, Laboratory of Hygiene, Dept. of National Health and Welfare

Doom Bunnag, M.D., M.P.H., 7 Suravongs Road, Bangkok, Thailand, Bacteriologist, Dept. of Medical Sciences

Evan T. Bynoe, Ph.D., Laboratory of Hygiene, 45 Spencer St., Ottawa, Ont., Canada, Bacteriologist in Charge, Bacteriology-Immunization Section

C. Valdemar Christiansen, 140 W. Ontario St., Chicago 10, Ill., Director of Laboratories, Bowman Dairy Co.

Marguerite B. Derry, 22 Griggs Terrace, Brookline, Mass., Bacteriology Instructor, Simmons College

Jane E. Hodgson, 408 Woodley Road, Montgomery Ala., Assoc. Bacteriologist, State Dept. of Health

Jacob Koomen, Jr., M.D., 260 Crittenden Blvd., Rochester 20, N. Y., Assoc. Director, Health Bureau Laboratories and Instructor in Medicine and Bacteriology, Univ. of Rochester School of Medicine and Dentistry

Ernest M. Noblitt, M.S.P.H., 9600 University, Chicago 28, Ill., Research Bacteriologist, Swift & Co.

John W. Palmer, Ph.D., E. R. Squibb & Sons, New Brunswick, N. J., Director of Biological Development

Yoshihiro Uchida, 860 No. 5th St., San Jose, Calif., Head Clinical Laboratory Technician and Bacteriologist, Doctors General Hospital

Statistics Section

Bernard R. Blishen, M.A., 400 Laurier Ave., East, Ottawa, Ont., Canada, Statistician, Dominion Bureau of Statistics

Ernest B. Davis, 178 Rockyford, Rd., Atlanta, Ga., Secretary-Treasurer, State Dept. of Public Health

William S. Montgomery, 6324 Gardenville Ave., St. Louis 16, Mo., Health Program Representative, U.S.P.H.S.

Gerard B. Mullin, 70 Dickens St., Wollaston 70, Mass., Statistician, Quincy Health Dept.

Engineering Section

J. Kenneth Adams, 12 Royden Rd., Tenafly, N. J., Supt., Sanitation Dept.

A. William Albert, M.S., 127 Parkside Ave., Braintree, Mass., Sanitary Engineer, U. S. Navy

Frank C. Amsbary, Jr., C. E., 122 N. Walnut St., Champaign, Ill., Manager, Vice-President and Secy., Illinois Water Service Co.

Robert J. Auld, C. E., Calle Espana 2015, Santurce, P. R., Engineer-Inspector, P. R. Aqueduct and Sewer Authority

Paul Bolton, M.P.H., 1027 Des Moines St., Des Moines, Ia., Assoc. Director, Division of Engineering, State Dept. of Health

Grant K. Borg, M.S., 356 University St., Salt Lake City, Utah, Asst. Professor of Civil Engineering, Univ. of Utah

William A. Childs, Jr., P. O. Box 682, Fernandina, Fla., Instrument Technician, Container Corporation of America

Russell H. Coltson, 15 W. Huron St., Pontiac, Mich., Supervisor of Sanitation, Oakland Co. Dept. of Health

Clarence K. Dion, Boston Post Rd., Westerly, R. I., Supt., Water & Sewer Depts.

James A. Dolan, 10 Condict St., Jersey City 6, N. J., Junior Engineer, Clyde Potts Associates

William C. Engelmann, 68 Spindle Rd., Hicksville, N. Y., Draftsman, Nassau Co. Dept. of Public Works

Salvatore P. Grasso, M.C.E., Town Hall, Milford, N. H., Supt. of Public Works

William E. Korbitz, 1052 E. Johnson St., Madison, Wis., Research Asst., Univ. of Wisconsin

John W. Krause, 131 S. Brainard Ave., La-Grange, Ill., Supt. of Water, Water Dept.

Albert J. LePage, Commonwealth Rd., Natick, Mass., Junior Sanitary Engineer, Metropolitan Dist. Commission

George L. Loelkes, 7393 Flora Blvd., Maplewood, Mo., Engineer, G. W. Kropp Co.

Irvan F. Mendenhall, 672 S. Lafayette Park Place, Los Angeles 5, Calif., Consulting Engineer

Herman L. Moor, Ransford Hotel, Brainerd, Minn., Supt., Intrusion-Prepakt, Inc.

Carl A. Neumayer, Jr., 2417 N. California Ave., Chicago 47, Ill., Civil Engineer, Skidmore, Owings & Merrill

Francis T. Osborne, Larson Bldg., Yakima, Wash., Assoc. Consulting Engineer, G. D. Hall & Associates

John C. Robertson, 324 Woodward Ave., Kalamazoo, Mich., Sanitary Engineer, Kalamazoo City-County Health Dept.

Eugene M. Rothman, 417 East 13 St., Kansas City, Mo., Public Health Engineer, Missouri River Basin Office, U.S.P.H.S.

Robert W. Rowen, 70 Pine St., New York 5, N. Y., Vice-President in charge of Engineering, Nichols Engineering and Research Corp.

Mateo Saenz, M. S., 1 Sickles St., Apt. D-24, New York 34, N. Y., Sanitary Engineer, Buck, Seifert & Jost

M. J. Shelton, 4769 Spring St., LaMesa, Calif., General Manager and Chief Engineer, La-Mesa, Lemon Grove and Spring Valley Irrigation Dist.

Elmer C. Slagle, M.P.H., 532 – 9th Ave., S.E., Minneapolis, Minn., Public Health Engineer, State Dept. of Health

Donald Suggs, 2100 Lyon Ave., Belmont, Calif., Senior Sanitary Engineer, Division of Local Health Service, State Dept. of Public Health

Henry W. Van Hovenberg, Box 288, Mt. Pleasant, Tex., Engineer of Tests and Sanitation, St. Louis Southwestern Railway Lines

Albert G. Vinick, 4733 Olcott Ave., East Chicago, Ind., Supt. Dept. of Water Works

Theodore Wadleigh, Jr., M.S., 753 Orchard Ave., Aurora, Ill., Regional Sanitary Engineer, State Dept. of Public Health

William B. Walshe, 4496 Arch, San Diego 16, Calif., Chief, Bureau of Food Sanitation, San Diego Co. Health Dept.

Roy E. Weber, P. O. Box 1891, West Palm Beach, Fla., Assoc., G. S. Brockway Consulting Engineers

Karl H. Wilber, Upper Main St., R.F.D. No. 1, South Amboy, N. J., Boro Engineer, Sayreville

Industrial Hygiene Section

Col. Theodore C. Bedwell, Jr., M.C., USAF., 824 Argonne Drive, Baltimore 18, Md., Staff Medical Advisor

Russell W. Courtney, 400 Hayward St., Woodstock, Ill., Industrial Hygiene Engineer, State Health Dept.

Food and Nutrition Section

Nicholas Dietz, Jr., Ph.D., Creighton Univ., School of Medicine, 302 N. 14 St., Omaha 2, Nebr., Assoc. Professor of Biochemistry and Nutrition

Jane C. Ebbs, Ph.D., 8 Devon Rd., Silver Spring, Md., Special Feeding and Nutrition Adviser to Office of Quartermaster General and Under Secretary of Army

Ellen C. Ruthman, American Red Cross, 17th & D. Sts., Washington, D. C., Asst. Director, Food and Nutrition Service

Maternal and Child Health Section

Victoria E. Thompson, R.N., Emory Univ., Field Station, Newton, Ga., Field Nurse

Public Health Education Section

John Armstrong, Wappapello, Mo., Formerly in public school administration; to work in public health education

Lyle L. Cameron, M.P.E., 1330 West Michigan St., Indianapolis, Ind., Exec. Secy., Indiana Council for Children & Youth

Lola M. Christenson, R.N., 1006 – 2nd St., S.W., Wadena, Minn., Member, Wadena County Welfare Board

Harry M. Dawdy, 506 New England Bldg., Topeka, Kans., Exec. Director, Kansas Division, American Cancer Society

E. B. Erskine, M.D., Univ. of Illinois, Navy Pier, Chicago, Ill., Director of Health Service and Professor of Hygiene

Thomas Fansler, M.A., National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill., Director of Research

John Gard, 730 South 6th St., Springfield, Ill., Director of Rehabilitation, Illinois Tuberculosis Assn.

Philomene E. Lenz, R.N., Hotel Holley, 36 Washington Sq. W., New York 11, N. Y., Staff Nurse, U. S. Marine Hospital, Staten Island

Robert Levy, 1823-A Oregon, St. Louis, Mo., Asst. Sanitarian, St. Louis Health Division

Wayne E. Messick, M.S.P.H., Adams Co. Health Dept., Majestic Bldg., Quincy, Ill., Director of Health Education

Martin A. Rosenberg, 780 Broadway, Newark, N. J., Rabies Control Warden, State Dept. of Health

Daniel Sullivan, M.P.H., Heart Demonstration Program, U.S.P.H.S., City Hall, Newton Centre 59, Mass., Public Health Educator

Helen E. Sweet, Ph.D., 337 West Brookdale Place, Fullerton, Calif., Assoc. Professor of Biology and Dean of Women, Santa Barbara College, Univ. of California

Mabel L. Walker, M.S.P.H., Mississippi Vocational College, Itta Bena, Miss., Health Educator

Public Health Nursing Section

Margaret S. Allen, Garvin Co. Health Dept., Pauls Valley, Okla., Public Health Nurse

Mary K. Bailey, 207 W. Front St., Burlington, N. C., Supervising Public Health Nurse, Alamance Co. Health Dept.

Julia P. Brandeberry, R.N., 212 Pine St., Paw Paw, Mich., Supervising Nurse and Acting Director, Van Buren Co. Health Dept.

Mary A. Burke, M.A., 334 Bates St., Detroit 26, Mich., Public Health Nursing Consultant, Dept. of Health

Florence R. Cohen, 1802 So. Blvd., Dallas, Tex., Chief, Nursing Unit, Veterans Administration

Alta B. Cornell, R.N., Grand Traverse-Leelanau Co. Health Dept., Traverse City, Mich., Public Health Nurse

Corinne H. Dixon, 4147 Washington, St. Louis, Mo., Field Nurse, Visiting Nurse Assn., E. St. Louis, Ill.

Daphine D. Doster, R.N., M.P.H., 2719 – 31st St., S.E., Washington, D. C., Regional Public Health Nursing Consultant, U.S.P.H.S.

Irene M. Eby, R.N., 112 N. Main St., P. O. Box 122, Mt. Carroll, Ill., Carroll County Public Health Nurse

Doris M. Fish, 35–19 – 147th St., Flushing, N. Y., Student, New York Univ.

Kathryn Fitzpatrick, M.A., 4066 Lindell Blvd., Apt. 709, St. Louis 8, Mo., Asst. Director, Nursing Service, American National Red Cross

Esther M. Flemming, R.N., M.A., 397 State St., Albany, N. Y., Consultant Public Health Nurse, State Dept. of Health

Sophie J. Goldblatt, R.N., 115 Lenox Rd., Brooklyn 26, N. Y., Field Nurse, Yonkers Visiting Nurse Assn.

Madeline E. Groesch, 1724-A No. 47, E. St. Louis, Ill., Nursing Consultant, Division of Services for Crippled Children, Univ. of Illinois.

Helena M. Haley, R.N., M.A., 566 Third Ave., Troy, N. Y., Asst. Director, Division of Nursing, Rensselaer Co. Dept. of Health

Gertrude Hamburger, R.N., 649 East 14th St., New York, N. Y., Public Health Nurse, Health Dept.

Jessie A. Jones, 101½ E. Main St., Taylorville, Ill., School Nurse and Tuberculosis Nurse, Christian County Sanitation Board and Nursing Service

Irene M. Lewis, R.N., Green Lake, Wis., County Nurse, Green Lake County Nursing Service

Mary M. Morris, 1300 S. Fourth St., Leavenworth, Kans., Public Health Nurse, Leavenworth City-County Health Dept.

Helen N. Murdoch, 2451 Cedar Ave., Long Beach 6, Calif., Tuberculosis Nurse Consultant, U.S.P.H.S.

Jennie M. Niemela, Rt. 3, Box 386, Kent, Wash., Staff Nurse, Seattle-King Co. Dept. of Public Health

Mary K. Ochiai, M.N., 2871 Blanche St., Pasadena 10, Calif., Public Health Nurse, Los Angeles Co. Health Dept.

Lois J. Pentecost, 1926 Laurel St., Joplin, Mo., Formerly Nurse with Lyon County (Kans.) Health Dept.

Shirley Robb, 894 Atkinson, Detroit 2, Mich., Staff Nurse, Wayne Co. Health Dept.

Elizabeth M. Rownd, R.N., 1941 J. St., Lincoln 8, Nebr., Senior Public Health Nurse, Lincoln City-Lancaster County Health Dept.

Epidemiology Section

Thomas R. Dawber, M.D., 39 Sheridan Rd., Wellesley Hills, Mass., Director, Framingham Heart Program, U.S.P.H.S.

Anne M. Fisher, R.N., M.S., Magee Hall, Forbes & Halket, Pittsburgh, Pa., Asst. Professor of Nursing, Univ. of Pittsburgh

Kari O. Savonen, M.D., 4 Pajulahdentie, Kulosaari, Helsinki, Finland, Director, Students Health Service, National Union of Finnish Students

Walton H. Y. Smith, M.D.C.M., C.P.H., 519 Dexter Ave., Montgomery, Ala., Director, Bureau of Communicable Diseases, State Dept. of Public Health

School Health Section

Vera Brady, R.N., 1821 Poplar Lane, Albuquerque, N. M., Staff Nurse, Bernalillo County Health Dept.

Maxine M. Brown, R.N., Health Center, West Texas State College, Canyon, Tex., College Health Nurse

S. I. Fuenning, M.D., M.Sc., 317 No. 18th St., Lincoln, Nebr., Director of Student Health Center, Univ. of Nebraska

Madar R. Nowlin, M.A., 951 Whitmore Rd., Detroit 3, Mich., Health Educator, Board of Education

Ora Wakefield, 501 Chesterfield St., Nashville, Tenn., Health Education Coordinator, Nashville Public Schools

Dental Health Section

Wilbur L. Dillman, D.D.S., 1009 North Park St., Bloomington, Ill., Public Health Dentist, McLean Co. Health Dept.

John G. Urban, D.D.S., 5636 Etzel St., St. Louis, Mo., Supervising Dentist, Municipal Dental Clinics, Division of Health

Medical Care Section

William C. Banton, II, M.D., 1201 Aubert Ave., Apt. 4-A, St. Louis 13, Mo., Physician, Tuberculosis Section, Health Division

Leo E. Brown, 230 State St., Harrisburg, Pa., Exec. Asst., Medical Society of Pennsylvania

Charles P. Derleth, 3718 Melba Place, Normandy, St. Louis 20, Mo., Administrative Asst. to Area Medical Administrator, UMWA Welfare and Retirement Fund

Frederic W. Fagler, 225 Jenkins Bldg., Pittsburgh 22, Pa., Exec. Secy., Allegheny Co. Medical Society.

Sidney R. Garfield, M.D., 280 MacArthur Blvd. West, Oakland, Calif., Medical Director, Permanente, Foundation

Edward V. Henson, M.D., Carbide & Carbon Chemicals Division, South Charleston, W. Va., Medical Director

Doris P. Wheeler, M.A., 3420 Longfellow Blvd., St. Louis 4, Mo., Educational Director and Health Services Director, Southwest Region, International Ladies Garment Workers Union

Unaffiliated

Rudolph M. Bahn, Box 625, Carbondale, Ill., Communicable Disease Investigator, Jackson Co. Health Dept.

Norton G. Chaucer, M.D., 175 New Haven Ave., Woodmont, Conn., Student, Yale School of Public Health

Samuel H. Dart, D.V.M., 4104 West Beach Blvd., Gulfport, Miss., Veterinarian, Harrison Co. Health Dept.

John F. Williams, 1263 West Gregory, Kansas City, Mo., Hospital Program Representative, U.S.P.H.S.

January and February Journals Wanted

Due to the large number of new memberships and subscriptions received during the first six months of the year, the supply of January and February, 1950, *Journals* has become depleted and the Circulation Department cannot supply these issues to certain members and subscribers whose names were added to the mailing list late in June.

Contributions of the January and/or February *Journals* will be welcomed and should be sent collect to the American Public Health Association, 1790 Broadway, New York 19, N. Y.

A.P.H.A. membership application blank on page XXIX

EMPLOYMENT SERVICE

The following pages present information for those seeking qualified public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

POSITIONS AVAILABLE

Public Health Physician wanted in Santa Barbara County, California, to assist the health officer in county health programs. California medical license required. Car furnished. Salary range $535 to $635 per month. May start above minimum, depending on qualifications, training, and experience. Apply to: Joseph T. Nardo, M.D., P. O. Box 119, Santa Barbara, Calif.

Health Officer, midwestern city of 76,000, to coördinate various health services. Should be graduate of recognized medical and public health schools with at least one year's full-time experience in public health work, or equivalent training and experience considered. Write: **Box A-93,** Employment Service, A.P.H.A.

Public Health Physician as Medical Director of Bi-County Health Department in southwestern Illinois. Important public health job to be done. Salary: $7,000. Apply to: Dr. Emmett J. Gillespie, Secretary, Alexander-Pulaski Bi-county Board of Health, Cairo, Ill.

Medical Health Officer for Shelby-Effingham County Health Department; central Illinois location; possibility of renting living quarters in Health Department building if no children; salary range $6,900–$9,000; may start above minimum; must have capacity for good public relations. Write to: Mr. J. H. Griffin, Teutopolis, Ill., or to Dr. O. G. Kauder, Findlay, Ill.

Staff Public Health Nurse—California or out of state registration required. Salary range: $259 to $319; 40 hour week, vacation, sick pay, pensions, and other merit system benefits. Apply to: Orange County Personnel Department, 644 No. Broadway, Santa Ana, Calif.

Qualified Staff Nurses, Nurse and Non-Nurse Physical Therapists for visiting nurse associations. Program includes care of the ill in their homes, maternal and child hygiene, mothers' classes, rehabilitation, and physical therapy. Salary dependent on education and experience. Five day week; liberal holiday, vacation and sick leave allowance. University facilities available locally for educational plans. Immediate placement. Write to: Ruth E. TeLinde, Executive Director Visiting Nurse Association, 1038 North Cass Street, Milwaukee, Wis.

Public Health Nursing Consultant in State Department of Health to act as Educational Director with opportunity for promotion to position of State Director; Bachelor's degree in public health nursing, 3 to 5 years experience with at least 2 years in supervision; salary range: $3,600–$4,500 a year; 38 hour week, vacation, sick leave, retirement, Merit System, travel expenses, mileage at 7½¢ a mile or car furnished.

Public Health Nursing Supervisor with headquarters in Williston or Dickinson; minimum one year approved study in public health nursing, 3 years experience, salary range: $3,000–$3,720; 38 hour week, vacation, sick leave, retirement, Merit System, travel expenses, mileage at 7½¢ a mile or car furnished.

For complete information on above positions, write: R. O. Saxvik, M.D., State Health Officer, Bismarck, N. D.

Nursing Consultants for a Crippled Children's Program: several immediate openings available; interesting and challenging. Qualifications: graduation from college desirable; graduation from an accredited school of nursing; completion of an approved one year program of study in Public Health Nursing; three years experience in a generalized public health nursing agency, one of which should be in a supervisory capacity. Experience in pediatric and orthopedic nursing desirable. Salary range: $3,180–$4,200; for those who are registered physical therapists, the range is $3,240–$4,500. One month vacation, sick leave, retirement plan. Write: Herbert R. Kobes, M.D., Director, University of Illinois, Division of Services for Crippled Children, 1105 So. Sixth Street, Springfield, Ill.

Sanitary Engineer with Bachelor's degree and at least five years experience in health departments mostly at local level. Administrative research work with national health agency. An opportunity will be afforded to meet and work with public health engineering administrators east of the Rockies. Salary about $6,000. Write: **Box A-75,** Employment Service, A.P.H.A.

Deputy Health Commissioner with training or experience in public health. Salary $8,120 per year and traveling. Write: Saginaw County Health Department, 1501 N. Michigan, Saginaw, Mich.

Public Health Nurses—with certificate and year experience. Government field work, Oklahoma, good locations, starting at $3,825 per annum with automatic promotions every 12 months to a top of $4,575 per annum, 40 hour week, one month paid vacation yearly, paid sick leave, retirement system, disability compensation, automobile and travel expenses furnished. Write: **Box 139,** Kiowa Indian Hospital, Lawton, Okla.

Public Health and Welfare Adviser. Office of the High Commissioner for Germany. Salary $9,150 plus quarters. M.D. and Master of Public Health Degrees required, plus several years experience in the welfare and health field. Knowledge of the German language is advisable. Would direct a program for the modernization of German health and welfare including reorientation for public health and welfare workers. For further information write or call Mr. Austin Beall, Division of Foreign Service Personnel, Department of State, Washington, D.C.

ANNOUNCEMENTS

Notice of Fellowship in Poliomyelitis
The Hospital for Sick Children, Toronto, Canada

Beginning January 1, 1951, there will be available a fellowship with a tenure of one year for experimental research in poliomyelitis. The value of the fellowship which is without board or residence will depend upon the qualifications of the applicant with a maximum of $3,500 per annum. Applicants should state age, sex, marital status, medical school and date of graduation. Experience in Pathology and/or Bacteriology is desirable. Applications should be addressed to Mr. J. H. W. Bower, Superintendent, The Hospital for Sick Children, Toronto, Canada.

Kentucky Public Health Vacancies

The position of Deputy State Health Commissioner, Director of Local Health Services, and Director of School Health Services is vacant in Kentucky. Salary depends on training and experience. An excellent opportunity for the right man. If interested, contact Bruce Underwood, M.D., State Health Commissioner, 620 South 3rd Street, Louisville 2, Ky.

Wanted for New Mexico Department of Public Health

Bacteriologist-Serologists for positions at three levels. Apply for official application blank and further details to Merit System Supervisor, Box 939, Santa Fe, N. M.

Nursing Positions Available Immediately

Public Health Nurse, Senior.....$385 per month
Public Health Nurse, Midwife..... 385 per month
Public Health Nurse..... 370 per month

Annual monthly increment of $15.00 through five pay grades; 15 per cent Interior Differential for placements in Interior Alaska where cost of living is higher. All must have completed an approved course of study in public health nursing, and nurse-midwives, a course in midwifery; public health nurses and public health nurse-midwives must have had at least one year of generalized public health nursing experience, senior public health nurses, two years. Benefits: retirement plan, 30 working days per year annual leave, also 15 days sick leave. Write: Director, Nursing Division, Alaska Department of Health, Juneau, Alaska.

POSITIONS WANTED

Public Health Educator—veteran, mature, aggressive, 26. B.S. in Health Education. Desires responsible position in industry or with voluntary or official health agency. Available immediately. Write: **Box H.E.31,** Employment Service, A.P.H.A.

Advertisement

All communications should be sent to Burneice Larson, Director, The Medical Bureau, Palmolive Building, Chicago 11, Ill.

Opportunities Available

WANTED—(a) Chiefs: medical section, tuberculosis and V.D. control, qualified to conduct statewide program and, also, medical directors for metropolitan, county, or city-county health programs. (b) Commissioner of health; university town, 70,000, Midwest. (c) Chairman, department of preventive medicine; university medical school; West: (d) Epidemiologist; city health department; large city, Southwest. (e) Assistant director, industrial hygiene; state department of health; East. (f) Director, student health department; liberal arts college; Midwest. PH1-1

WANTED—(a) Public health man with Master's or doctor's degree to serve as chief of state department, health education; experience in directing state-wide program desirable. (b) Industrial hygienist trained in engineering and chemistry; southern plant, large industrial company. (c) Sanitary engineer; minimum five years' experience water supply design or construction or experience, state health department; foreign assignment. (d) Health coördinator; county health department; duties include six hours' college teaching; college town; Midwest. (e) Director, division of health education, state department of health; duties consist of supervising state-wide program; public health education; Middle West. (f) Health educator; county health department; Southern California. PH1-2

WANTED—PUBLIC HEALTH NURSES FOR FOLLOWING: (a) To head visiting nurse program; Southern California. (b) Director of public health nursing; city health department, United States dependency; although tropical country, climate mild. (c) Several supervisors and, also, staff nurses; college town, 100,000 near Chicago. (d) To supervise student health department; administrative ability required; liberal arts college; Middle West. (e) Faculty appointment; department of public health nursing, Eastern university. (f) To serve as executive secretary, county tuberculosis association; Chicago area. PH1-3

Opportunities Wanted

HEALTH EDUCATOR; M.S., P.H., 3 years, health educator, county health department; 5 years, health coördinator, liberal arts college.

PUBLIC HEALTH ENGINEER; B.S. Chemical Engineering, M.S. Sanitary Engineering; 12 years' interesting experience including 4 years in South America; prefers supervisory work with opportunity for field work and research.

PUBLIC HEALTH NURSE ADMINISTRATOR; graduate of 5 year public health nursing course; B.S., Simmons; M.P.H., Health Education, eastern university; 3 years, director, health education, state university; 8 years' executive experience in public health nursing.

PUBLIC HEALTH PHYSICIANS; B.A., B.S., M.D., M.P.H., leading universities; 8 years, director of student health, state university; past 6 years, director, metropolitan department of health; Diplomate, American Board of Preventive Medicine.

NEWS FROM THE FIELD

WHO NEWS

Environmental Sanitation Seminar

An environmental sanitation seminar for specialists from 16 European countries opened at The Hague on November 27. In informal round table discussions the most important techniques used by participating countries in solving their public health problems were considered as well as the status of research on sanitary engineering problems. Also discussed was the training of sanitary engineers, particularly in view of increased demands for their services in public works and disease control programs.

Chairman of the seminar was Dr. W. F. Krul, director of the Institute of Water Supply of the Netherlands. Sponsored jointly by WHO, the Netherlands Government, and the Rockefeller Foundation. Herbert Bosch, director of WHO's Environmental Section, was assisted in developing the seminar by Dr. Herman Baity, professor of Sanitary Engineering, University of North Carolina School of Public Health, who has been on a three month loan to WHO.

WHO has estimated that one-fifth of all deaths are caused by faulty environmental conditions which give rise, for example, to water-borne diseases such as typhoid fever and insect-borne infections such as malaria.

Beirut Tropical Diseases Symposium

Late in November, 1950, about 500 physicians and public health workers met under the auspices of the Division of Medicine, American University of Beirut, to discuss the techniques of combating major indigenous health problems. This first Middle East Medical Symposium on the Prophylactic and Therapeutic Aspects of Tropical Diseases was sponsored by WHO, the UN Relief and Works Agency for Palestine Refugees, and the U.S. Navy Medical Research Unit in Cairo. Notable among the points stressed in this Conference was the need for simultaneous improvement of economic and social conditions, together with the raising of health standards, particularly in the rural areas of the Middle East. Discussions centered around the control of malaria, venereal diseases, tuberculosis, amebic dysentery, typhoid fever, brucellosis, schistosomiasis and many aspects of sanitation problems relating to these diseases.

Among the speakers was Hamilton H. Anderson, dean of the Medical Faculty of the American University of Beirut, who had just returned from the United States. He announced the discovery of a new antibiotic "fumigillin." Although still in the experimental stage, he said it was expected to kill amebae and would thus be of value in the treatment of amebic dysentery, a disease widespread in the Middle East.

Pan American Bureau Nearing Fifty

The Pan American Sanitary Bureau celebrated its 48th birthday on December 2, 1950, with a reception in the Pan American Union Building in Washington, D. C. Ernest L. Stebbins, M.D., director of the Johns Hopkins School of Public Health, spoke on the future of international health relations. At this meeting it was urged that each of the 21 member countries organize a national public health congress to begin on December 2, 1951, to prepare for the "First Pan American Health Congress" in December, 1952. This Conference, celebrating the first half century of PASB, will be held in Havana, Cuba, in

accordance with a resolution adopted at the 13th Pan American Sanitary Conference held in October, 1950.

International Sanitary Regulations

WHO is studying the various International Sanitary Conventions now in force with the plan of replacing them by a single set of International Sanitary Regulations that will insure maximum safety with minimum hindrance to trade and travel. The new set of regulations will be submitted to the 1951 World Health Assembly and will become effective 6 months after approval.

In the meantime, WHO acts as an international tribunal in arbitrating disputes between governments on quarantine problems. In this role it has dealt with 40 cases since 1949.

ACTH International Standardization

The Expert Committee on Biological Standardization Meeting in Geneva late in November, 1950, adopted an international standard for ACTH among 16 biological substances for which it set international standards. This brings to 55 the number of biological preparations standardized either by WHO or its predecessor, the Health Organization of the League of Nations.

In addition, the Expert Committee recommended establishment of an international collection of new antibiotics specimens to be made available to scientists all over the world. This collection would be kept at the National Institute for Medical Research in London.

Malaria Round the World

Late in 1950 the WHO Regional Office in Alexandria reported an encouraging start in the mass malaria control program being carried out in IRAN as a part of a 7 year plan for economic development undertaken by the Iranian government. The malaria control program is carried out jointly by the Iranian Ministry of Public Health, the Health Section of the Seven-Year Plan Organization, and a WHO Malaria Advisory Team. The latter is in charge of Professor Mario Giaquinto who has most recently been director of the Imperial Ethiopian Medical Research Institute at Addis Ababa. His team consists also of local doctors and other experts. Of an estimated Iranian population of 16,000,000, more than a fourth, comprising about 880,000 families, live in a malarious environment. DDT spraying by the year's end had been extended to about 800,000 persons and will be expanded in 1951. It is expected that agricultural and other output will rise appreciably after a year or two of the program's operation.

In November the WHO Malaria Control Demonstration Team in PAKISTAN reported the results of a scientific investigation made by its agricultural officer into the two year operation of the team in East Bengal. "This has conclusively proved that Malaria Control results in a direct increase of the yield of crops and an appreciable decrease in the man hours of labor which have to be expended per acre." Details can be secured from a Pan American Sanitary Bureau News Release of November 20, 1950.

For two weeks beginning November 27, WHO and the Commission for Technical Coöperation in Africa sponsored the first AFRICAN Malaria Conference, which was held in Kampala, Uganda. They discussed and planned for anti-malaria measures applicable to the whole continent. The Conference Chairman was Professor N. H. Swellengrebel, director of the Netherlands Institute of Tropical Medicine. The Conference was followed by a meeting of the WHO Expert Committee on Malaria, which studied the effects of DDT spraying in a number of countries and considered how the Conference recommendations might best be put into

effect in Africa. At about the same time WHO announced the creation of a Regional Office for Africa. Temporary headquarters are in Geneva, pending the selection of an African location.

CLEVELAND HEALTH MUSEUM'S 10 YEARS

November, 1950, marked the end of the first 10 years of the Cleveland Health Museum. It celebrated in various ways: *Tone,* its monthly newsletter, was designed as "a bird's-eye view of what the Museum has accomplished during the past decade." Contrary to the expectations of skeptics, the Museum not only survived its first year but has gained local, national, and international recognition in its first decade. It has prepared duplicate exhibits for Mexico, Colombia, and New Zealand, and has had internes in training from various countries. An endowment fund of half a million dollars has been established and a new building acquired.

In 1944, half way along the 10 years, the Elizabeth Severance Prentiss National Award in Health Education was established. The 1950 recipient was Mayhew Derryberry, Ph.D., chief of the Division of Public Health Education, U. S. Public Health Service. The presentation was made by the Museum's president, Robert M. Stecher, M.D., at the 10th anniversary luncheon on November 13, sponsored by the Cleveland Chamber of Commerce. This annual award is made to recognize and thus encourage outstanding work in the field of health education.

The chief speaker at the anniversary luncheon was Howard A. Rusk, M.D., chairman of the Health Resources Advisory Committee of the National Security Resources Board. In discussing his subject, Medicine, Mobilization and Man Power, he said, "In the mobilization of our material, human, and financial resources, it is readily apparent that the major factor of our success will be dependent upon man power."

Other events of the anniversary celebration were the "christening" of "Eve" the Transparent Talking Woman, as a companion piece to the "Transparent Man" installed in the Museum in 1942, following its exhibit at the 1939–1940, New York World's Fair. The Transparent Woman was fabricated in Cologne in the workshops of the Dresden Museum. It was presented to the Museum by an anonymous donor.

RESEARCH WITH THE NEW DRUGS

The omnibus appropriation bill passed by the 81st Congress and approved by President Truman makes available $3,600,000 for research with the new drugs, cortisone and ACTH. This sum is allocated for grants to non-federal institutions for research into a number of diseases " with which there is the greatest chance for developing practical treatment procedures, or from which important fundamental information may be obtained." Among the lines of inquiry is whether rheumatic fever will respond to a short course of treatment and what the biological and long-term effects of the drugs may be. Surgeon General Scheele explained that grants will be made largely for study of the compounds in relation to arthritis and cancer, and to mental and neurological, metabolic, and cardiovascular diseases, as well as for basic laboratory studies on the biological effects of the compounds.

The grant program is carried out through the Research Grants and Fellowships Division of the National Institutes of Health. Coöperation is also being carried on with the Department of Agriculture in seeking plant sources from which cortisone and other steroids may be obtained.

NEW METHODOLOGY RESEARCH AWARD

Annual recognition in the form of a $500 award and a plaque will be available for the first time in 1951 for outstanding work in methodology research.

The prize, endowed by Kimble Glass Division of Owens-Illinois Glass Company, is known as the Kimble Glass Methodology Research Award, and will be awarded by the Conference of State and Provincial Public Health Laboratory Directors. Its purpose is to give public recognition and financial reward to an individual "who has contributed outstandingly in developing a new or better method of procedure in the field of public health work."

The Award's Committee is made up of the director of laboratories of four state health departments: Dr. Samuel R. Damon, Indiana; Dr. Malcolm Merrill, California; Dr. Francis C. Lawler, Vermont; and Dr. Albert V. Hardy, Florida; and Dr. Martin Frobisher, Jr., chief of bacteriology, Atlanta Communicable Disease Center, U. S. Public Health Service, and Dr. Geoffrey Edsall, professor of microbiology, Boston University School of Medicine.

Rules for the contest will be announced about March 1, 1951, by the Chairman of the Committee, Dr. Hardy, Florida State Board of Health, Jacksonville.

SALT SOLUTION FOR BURN SHOCK

Surgeon General Leonard A. Scheele of the U. S. Public Health Service has released a report from the Surgery Study Section of the National Institutes of Health which has recommended that the use of oral saline solutions be adopted as standard procedure in the treatment of shock due to burns and other injuries in the event of large-scale civilian catastrophe.

Research work under the auspices of the National Institutes of Health has led the Surgery Study Section to recommend that this information be made available to the medical profession and to those planning relief in potential disasters because of the great value of this simple and easily carried out form of treatment.

The composition of the salt solution: The most palatable salt solution is made by dissolving 3 to 4 grams of sodium chloride and 2 to 3 grams of sodium citrate in each liter of water. If sodium citrate is not available, ordinary baking soda may be substituted. The concentration of salt should not be in excess of 140 milliequivalents of sodium per liter. If the concentration is above this, vomiting and diarrhea become important complicating factors.

Whenever profound peripheral circulatory collapse is present, the intravenous route of administration must be used until peripheral blood flow has been reëstablished. The salt solutions found most satisfactory for this purpose are Hartmann's solution (Lactate-Ringer's solution) or plasma. In addition to the salt solution or plasma intravenously, whole blood is given concurrently whenever peripheral circulatory collapse exists. This materially implements the effectiveness of salt solutions.

The slightly hypotonic salt solution is the only drinking fluid permitted the injured individual until the edema of the injured parts begins to subside. Certain exceptions to this rule have to be made during the hot weather of summer when it is sometimes necessary to permit taking some non-salty water.

As much as 10 liters of the hypotonic salt solution have been drunk in the 24 hour period by adults who have been severely burned. Since salt solution has been substituted for water as a drinkable fluid, no burned person who has lived for longer than 3 hours after being admitted to the hospital has suffered from anuria. The "early toxemia phase" of the burns has also failed to appear and the osmotic concentration of the plasma electrolytes has been well maintained.

This information is available in a leaflet, *The ABC's of Salt and Soda for Shock in Burns*. Single copies are available without charge from the U. S. Public Health Service, Washington 25.

BLUE CROSS AND THE ARMED FORCES

Members now entering the armed forces may continue the enrollment of their families at reduced subscription fees in the Associated Hospital Service of New York and the United Medical Service. Since service men will not require benefits under the health insurance plans, they may temporarily discontinue enrollment. Subscription charges for the absent individual will be deducted from the usual family charges during this period. Full membership may be regained when original payments are resumed within 90 days after discharge from the armed services.

YELLOW FEVER ANNIVERSARY

It was pointed out during the 78th Annual Meeting of the A.P.H.A., held in St. Louis, that one of the great historical landmarks of the American Public Health Association had been the announcement just 50 years ago during the 28th Annual Meeting of the Association in Indianapolis by Dr. Walter Reed of his discovery of the transmission of yellow fever by the aedes mosquito, thereby confirming the theory of Dr. Carlos Finlay of Cuba.

The Association was fortunate in having distinguished representatives from Cuba present in St. Louis, including Dr. Domingo F. Ramos, Dr. Felix Hurtado, Dr. Rafael Calvo, and Dr. Alejandro Barrientos. The Governing Council unanimously adopted a resolution commemorating the golden anniversary of the announcement by Dr. Walter Reed.

COMMEMORATIVE STAMP HONORS NURSE

Early in November the Government of Cuba announced that it will shortly issue a special stamp to commemorate 50 years since Clara Louisa Maas, R.N., a United States nurse, died of yellow fever contracted during the experiments on the control of the disease which were conducted near Havana by Dr. Walter Reed of the U. S. Army.

The first announcement of Dr. Reed's discoveries was made 50 years ago at the 28th Annual Meeting of the American Public Health Association held in Indianapolis.

AMERICAN SOCIETY OF TROPICAL MEDICINE ELECTS OFFICERS

The American Society of Tropical Medicine concluded a three day meeting in early November in Savannah, Ga., at which time Paul F. Russell, M.D., of New York assumed the Presidency. W. A. Sodeman, M.D., of New Orleans is President-Elect; Harry Most, M.D., of New York, Vice-President, and Quentin M. Geiman, M.D., of Boston, Secretary-Treasurer.

LASKER PLANNED PARENTHOOD AWARDS

The 1950 Albert and Mary Lasker Foundation Awards in Planned Parenthood were given to Mrs. Margaret Sanger, New York, and Bessie L. Moses, M.D., instructor in obstetrics at Johns Hopkins University, Baltimore, at a luncheon in New York October 18. Mrs. Sanger's citation reads "To Margaret Sanger, foremost in teaching families wise planning in birth control; leader in influencing nations toward balanced population; living to see her beginnings in city slums grow into plans for a planet." The usual $500 cash award was doubled in her case. Dr. Moses's citation was made "in recognition of her brilliant record of forwarding the cause of planned parenthood among the public and the medical profession."

RESEARCH IN CHILDHOOD INFECTIONS

A virus research laboratory that will concentrate upon the study of childhood infections has been established at the University of Louisville School of Medicine. A grant from the recently organized Kentucky Child Health Foundation made possible the completion of the project. The researches of the laboratory will be supervised by Drs. Alex J.

Steigman and James G. Shaffer of the school's Child Health and Bacteriology Departments.

PERSONALS

LEON A. ALLEY, M.D., superintendent of Lakeville State Sanatorium, Middleboro, Mass., retired on October 31, following 34 years' service with the State Department of Public Health. At a dinner given recently by his associates in the department, Dr. Alley was cited for his long years of service marked by his "administrative competence."

ELMA H. ASHTON, is now supervisor of training in the Division of International Cooperation, U. S. Children's Bureau, where she plans programs of training and observation for foreign specialists in child health and welfare who study in this country under the auspices of the Bureau.

ALBERT C. BAXTER, M.D.,* formerly health officer of Illinois State Health District No. 10, recently retired at mandatory retirement age of 70, to become Health Officer of Springfield, Ill., succeeding J. H. SHAMEL, M.D.

HELEN M. BELKNAP, M.D., has been appointed pediatric consultant to the Division of Maternal and Child Hygiene of the West Virginia State Department of Health, succeeding HALLIE I. MORGAN, M.D.

JOSEPH E. CANNON, M.D., for the past 2 years clinical director of a Rhode Island state mental hospital, has been made chief, Tuberculosis Control Section, Colorado State Health Department.

ALICE CLARK, R.N., formerly an Army nurse and most recently with the U. S. Public Health Service in Denver, is advisory nurse for preventive medical services, Kentucky State Health Department.

GLADYS COOK, public health nurse on the staff of the New York State Department of Health since 1941, retired from state service on October 15.

COLONEL PAUL M. CRAWFORD, MC, AUS (rtd.) is the new director of Tuberculosis Control, Florida Department of Health.

GRACE CUTHBERT, M.D., director of the division of maternal and baby welfare of the Department of Health of New South Wales, Australia, attended the Annual Meeting of the A.P.H.A. in St. Louis as an official representative of the Society of Medical Officers of Health, London. She is in the United States on a WHO fellowship.

C. C. DAUER, M.D., M.P.H.,* has resigned as epidemiologist in the District of Columbia Department of Health, to become medical adviser to the chief of the National Office of Vital Statistics.

MAYHEW DERRYBERRY, PH.D.,* chief, Division of Public Health Education, U. S. Public Health Service, received the 1950 Prentiss National Award in Health Education at the 10th Anniversary Civic Luncheon of the Cleveland Health Museum on November 13. This annual award honors the memory of the Museum's foundation benefactress and encourages, through recognition, outstanding work in the field of health.

CHARLES H. DOWDING, JR., M.D.,† acting chief of the Maternal and Child Health Section from July, 1949, to July, 1950, and chief of the Tuberculosis Control Section, Colorado State Health Department, since July 1, 1950, became chief of the Maternal and Child Health Section October 1, succeeding RUTH HOWARD, M.D.,† who left in July to serve with a United Nations mission in Lebanon.

LEO EVANS, M.D., most recently in private practice in Pocasset, has been made director of the Beckham and Custer County Health Department in Oklahoma with headquarters in Clinton.

RAYMOND J. FAUST,† formerly chief of the Water Supply Section, Division of Engineering, Michigan Department of Health, has been appointed executive assistant secretary of the American Water Works Association.

N. R. FRANKOVELGIA, M.D.,† health officer of the Stickney Township Public Health District (Ill.), has enrolled in the University of Michigan School of Public Health. Upon completion of work for the Master of Public Health degree, he will take the competitive examination required for official recognition of the full-time status of the health officers of these public health districts.

RUTH FREEMAN, R.N.,* administrator of Nursing Services, American National Red Cross, has been appointed associate professor of Public Health Administration and head of the Division of Public Health Nursing at The Johns Hopkins School of Hygiene and Public Health. She will continue to serve as consultant with the Health Resources Office of the National Security Resources Board.

JULIA FREUND, R.N., has been appointed public health nursing consultant in mental hygiene, Division of Public Health Nursing, Maryland State Department of Health.

LOUISE GAGHAGEN has resigned from the Colorado State Department of Public Health to become consultant nurse in the tuberculosis program of the Denver Bureau of Health and Hospitals.

C. J. GILLOOLY, D.D.S., is on loan from the U. S. Public Health Service to serve as as-

sistant director of the Division of Dental Health, Kentucky State Department of Health.

LILLIAN GUIDRY,† formerly director, health education, Richmond (Va.) Tuberculosis Association, has been appointed health education consultant of Kanawha-Charleston Health Department, Charleston, West Va.

MARGARET LYNN HARTMAN, M.D., formerly in private practice in obstetrics, succeeds Y. E. PARKHURST, M.D., as director of the Cowley County Health Department, Kansas.

MARTHA KOEHNE, PH.D.,† chief of the nutrition unit in the Ohio Department of Health since 1936 and laboratory chemist from 1911 to 1918, retired on September 30.

EMIL KOTCHER, M.D.,† on the faculty of the University of Louisville Medical School, has been made director of public health laboratories, Kentucky State Health Department, succeeding LILLIAN SOUTH, M.D.*

GRANVILLE W. LARIMORE, M.D.,* director of the Office of Public Health Education, New York State Department of Health, was made president-elect of the Conference of State Directors of Health Education, at its recent annual meeting held in connection with the 78th Annual Meeting of the American Public Health Association.

ELIZABETH MACFARLANE,† who recently received the Master of Public Health degree from the University of Michigan, became supervisor of the Biometrics Unit, Division of Administration, Ohio State Health Department, on September 15.

HAROLD J. MAGNUSON, M.D.,† has been appointed a member of the World Health Organization Expert Advisory Panel on Venereal Infections and Treponematoses. Dr. Magnuson is the Director of the Venereal Disease Experimental Laboratory of the U. S. Public Health Service and research professor of the Department of Experimental Medicine in the School of Public Health, University of North Carolina at Chapel Hill.

JOHN HENRY MCCLEMENT, M.D., associate in medicine, College of Physicians and Surgeons, Columbia University, and assistant visiting physician, chest service, Bellevue Hospital, New York, is the first winner of the recently established James Alexander Miller Fellowship of the New York Tuberculosis and Health Association.

RUFUS E. MILES, JR., formerly of the Bureau of the Budget, Washington, has joined the Federal Security Administration in the newly created position of assistant administrator heading the coördination of health, education and welfare activities pertaining to national defense.

EDWARD A. PISZCZEK, M.D.,* director, Cook County Department of Public Health, Illinois, has received the Izaak Walton League's Sanitation Award for his contributions toward controlling water pollution in the state.

PAUL F. RUSSELL, M.D.,* Malaria Adviser of the International Health Division of the Rockefeller Foundation, and Chairman of the WHO Expert Committee on Malaria, attended the WHO African Malaria Conference and a meeting of the Expert Committee, both in Kampala, Uganda, November 27 to December 11. Following these meetings, at the request of the WHO he visited other areas of British East Africa, the Belgian Congo, French Equatorial Africa, and British West Africa. He then established his headquarters at the Superior Institute of Public Health, Viale Regina Margherita 299, Rome, Italy, as the International Health Division representative in Italy.

RALPH GRAFTON SMITH, M.D., who is professor and chairman of the department of Pharmacology, Tulane University School of Medicine, New Orleans, has been appointed chief of the new drug section of the Division of Medicine, Food and Drug Administration of the Federal Security Agency, succeeding ERWIN E. NELSON, M.D., resigned to become medical director of the Administration. The New Drug Section is responsible for evaluating the safety of every new drug before it is permitted to be placed on the market.

ALICE SPILLANE,* formerly director, division of health education, San Francisco Department of Public Health, has succeeded CECYL HAVELIN as consultant in health education with the Bureau of Health Education, Physical Education, and Recreation, California State Department of Education.

COL. MERVYN B. STARNES,* Veterinary Corps, has been assigned to the Medical Section of the Japan Logistical Command, with headquarters in Yokohama. Prior to entering the U. S. Army, Colonel Starnes was a public health veterinarian with the Dallas Department of Public Health.

ALFRED G. STOUGHTON, former chief of the Office of Hospital Information, Division of Hospital Facilities, Public Health Service, is now assistant director of the Washington Service Bureau, of the American Hospital Association.

MARY E. SWITZER, who has served several years as Assistant Federal Security Administrator, Washington, has been appointed to direct the federal-state Program of Vocational Rehabilitation under the FSA.

MAY TOLAND, recently joined the Maternal and

* Fellow.
† Member.

Child Health Division of the Arkansas State Health Department as dietitian consultant.

RAYMOND TORR, recently with Raymond Rich Associates and also assisting the American Public Health Association in the preparation of "What's the Score?" is now director of Public Relations of the New York City Cancer Committee.

CLAIR E. TURNER, DR.P.H.,* Assistant to the President of the National Foundation for Infantile Paralysis is on leave of absence to make a Health Education Survey in the Arab States for the World Health Organization. This is part of a joint project of WHO and UNESCO.

ROBERT VOGEL, M.D.,† already health commissioner for Delaware, Madison, and Union Counties, has succeeded FRANK HARTSOOK, M.D.,† as commissioner of the Morrow County General Health District in Ohio.

JAMES H. WELLS, M.D.,† formerly health officer in Bell and Fulton Counties, Kentucky, from 1938 to 1943, is health officer of Christian County after serving as a health officer in Florida for a number of years.

CONFERENCES AND DATES

Coming in January, February, and March:

American Society of Heating and Ventilating Engineers. Philadelphia, Pa. Jan. 22–25.

American Society for Public Administration. Hotel Statler, Washington, D. C. Mar. 9–11.

American Water Works Association. New York Section Luncheon Meeting. Park-Sheraton Hotel, New York, N. Y. Jan. 16.

Fifth American Congress on Obstetrics and Gynecology. Cincinnati, Ohio. Mar. 31–Apr. 4.

National Association of Methodist Hospitals and Homes. Congress Hotel, Chicago, Ill. Feb. 28–Mar. 1.

National Conference on Rural Health. Memphis, Tenn. Feb. 23–24.

Puerto Rico Public Health Association. San Juan. Feb. 14–17.

Sixth Industrial Waste Conference. Purdue University, Lafayette, Ind. Feb. 21–23.

Texas Public Health Association. Galveston. Feb. 19–21.

* Fellow.
† Member.

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